Osborne Hops On The CD-ROM Bandwagon: Page 146

Southern California's Computer Magazine

Jan. 1, 1992 • 91

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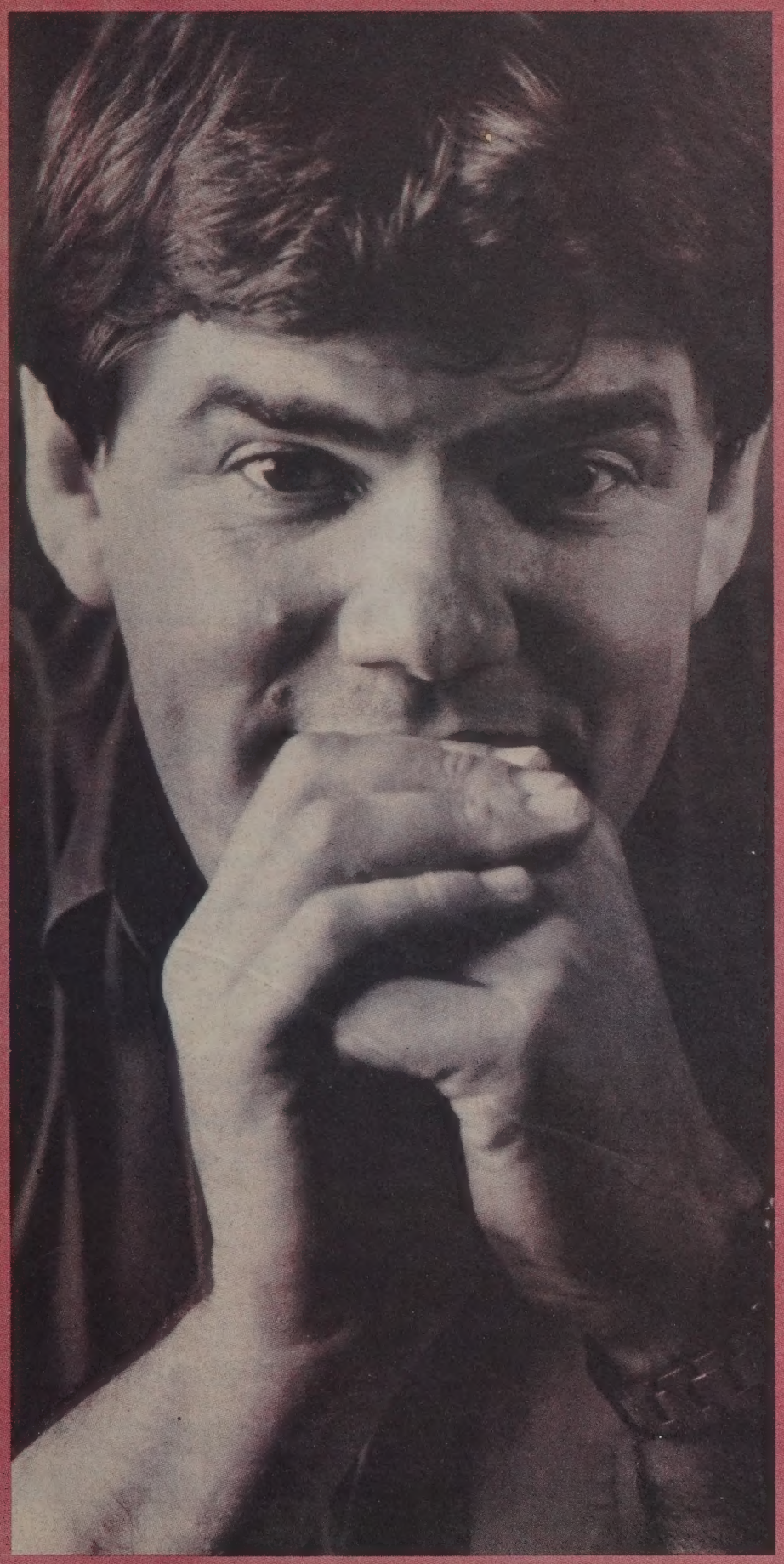

THE 5th ANNUAL MICROTIMES

100

Our list of industry leaders and unsung heroes who made a difference in the computer world in 1991. Story starts on page 55

MAN OF THE YEAR

Philippe Kahn

Chairman, President, and CEO Borland International

"Borland has a strong stance for innovation. Unlike Lotus, we don't believe in litigation as a way to gain a business advantage. We're a technology driven company." Story on page 52.

Securing Your System

"Only by understanding how attacks on password security are carried out do you know what to look for to detect a breach, how to construct defences, and how to evaluate the likelihood of different types of attacks for each system." Story starts on page 34

The Affordable Color-Mac Workstation

"More and more Mac users want to be able to include graphics, DTP, and mulitmedia as part of their regular work. Few of them can justify the investment in the heavy-duty desktop hardware of the full-time professional." Story starts on page 112

What's On Your Network?

"System analyst Devan Dewey uses NetOctopus information about software and hardware to look for problem areas on each Mac. 'It's a dream come true for someone who has to administer Macs over a 3000-mile area,' he says." Story starts on page 41

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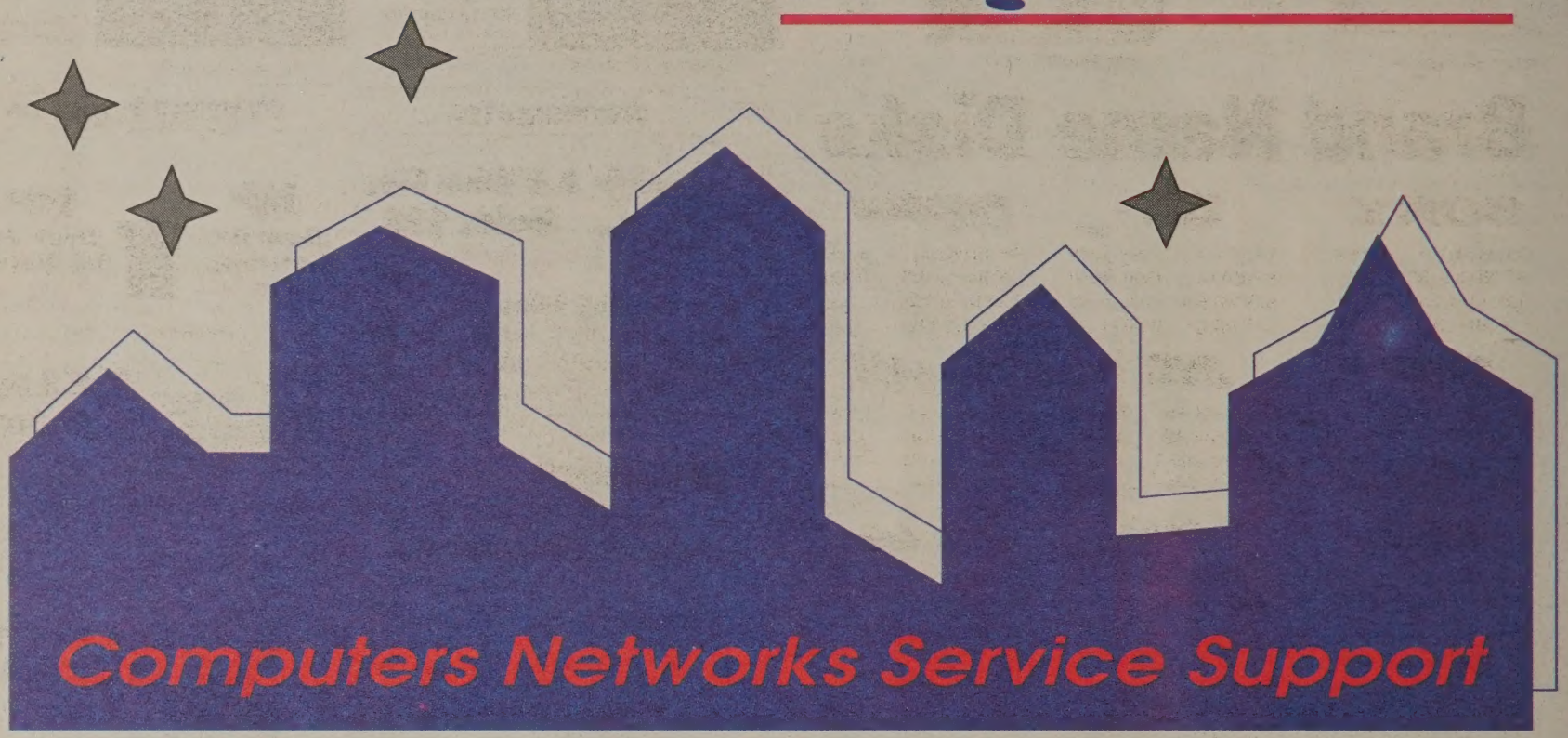

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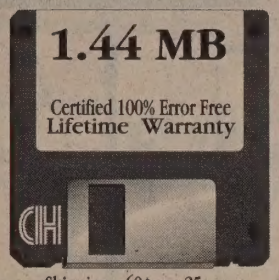

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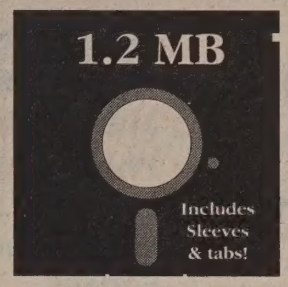

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3M DC2120 $21.95 ea

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DC2000	Formatted	24.79	n/a
DC2080	80 MB	18.99	18.91
DC2120	120 MB	21.95	20.79
DC6150	150 MB	23.99	22.90
DC6250	250 MB	28.95	28.19
DC6320	320 MB	29.90	28.90
DC6525	525 MB	32.90	31.90

*Sony is now 100% Colorado Drive compatible.
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CS-600HD $16.95
Shipping—30¢

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CS-600 XD	150 MB	17.95	17.50

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Under CPU / Monitor Drawer

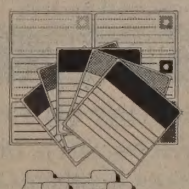
Fits under CPU or Monitor (as shown) .. $ 24.95

Under Desktop Drawer

Fits under Desktop (not shown) ..... $ 15.95

Shipping—Under CPU $5.50, Under Desktop $5.00

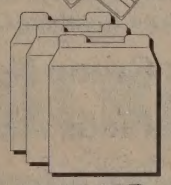
Diskette Accessories



User Labels

3.5" 50 Packs	$ 1.50
5.25" 100 Packs	2.00

3.5" is wrap-around style. Paks Include—Blue, Red, Yellow, Gray & Green



Disk Mailers

6" x 6" packs of 50	$ .29
6" x 8" packs of 50	.39
7" x 9" packs of 50	.49

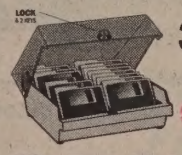
Plain White, holds 1 to 3 disks. Fold & tuck style.

Drive Cleaning Kits

3.5" Kit	$ 2.95
5.25" Kit	2.95

$2.95 Use every 2 weeks... Good for 10 uses.

Accessories

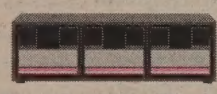


3.5" Disk File Holds 120 $9.95 w/lock

Flip Top Disk Files

Large—Holds 120-3.5", 140-5.25"	$ 9.95
Medium—Holds 80-3.5", 100-5.25"	7.95
Small—Holds 50-3.5", 50-5.25"	4.95

All include lock & 2 keys, tabbed dividers. Shipping—$1.25 ea



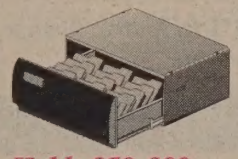
$18.95

Stackable Disk Cabinets

Holds 210–300

WD3-Wood 3.5" Drawer, Holds 210 $ 18.95
Measures:14.75"W x 5.25"H x 11"D—3 Drawers

WD5-Wood 5.25" Drawer, Holds 300 18.95
Measures: 13"W x 7.25"H x 14.5"D—2 Drawers
Shipping—$3.25 ea



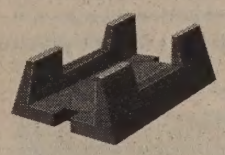
Stackable Disk Drawers $29.95

Holds 250–300

BD-203 3.5" Drawer, Holds 250 ..... $ 29.95
BD-205 5.25" Drawer, Holds 300 ..... 29.95
Both measure: 13"W x 7.25"H x 14.5"D.
Same Footprint! Shipping—$4.00

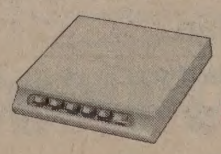
Monitor Mover $59.95

Holds 60lb, 11"x11" platform, 2-screw clamp. Swivels 360 degrees. Shipping—$6.00 ea



CPU Stand $7.95

Fits most CPU cases, from 4 to 7" wide shipping—$1.00 ea



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Controls up to 5 peripherals with lighted switches & master. Shipping—$2.50

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JAN. 1, 1992 ISSUE #91

MICROTIMES™

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A NOTE FROM THE EDITORS

This issue brings the 1991 edition of the MicroTimes 100, our annual list of people who've had a significant impact on the state of the industry in the preceding year.

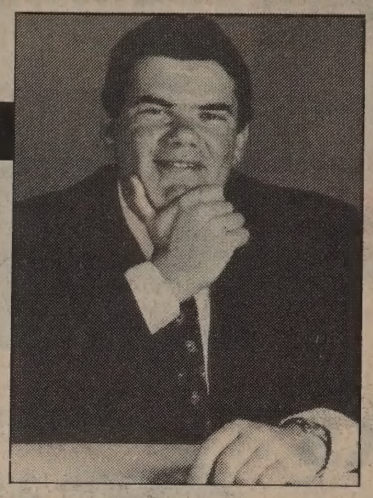
History may well remember 1991 as a year of disintegration and rebuilding. Industry giants like Apple, Compaq, and IBM found themselves in the process of self-reinvention; Microsoft and IBM's longtime alliance fell apart, sending shock waves through the development community and spawning a plethora of new consortia.

Probably the biggest shock wave came from the surprise announcement by Borland International that it was acquiring troubled software giant Ashton-Tate, a move with strong implications for the evolution of future database technology, to say nothing of corporate culture. Man of the Year and Borland CEO Philippe Kahn gives us a short update on page 52.

As 1992 gets under way, all of us at MicroTimes would like to thank you for your support and wish all of you a happy and prosperous year. We hope to bring you lots of good news and info in the months to come.

—ME

COVER STORY



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Philippe Kahn and his company, the "barbarians of software," are succeeding as others flounder.

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Mike Markowitz' Series "Your First Computer," will return in issue #92.

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- Operation Manual

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- Operation Manual

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- AT I/O (2Serials, Parallel, Game) Ports
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- Network Certified
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Conner 3204F IDE 200Mb	$579
Maxtor LXT-213A IDE 213Mb	$589

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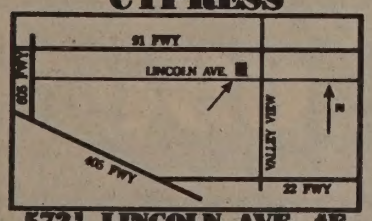

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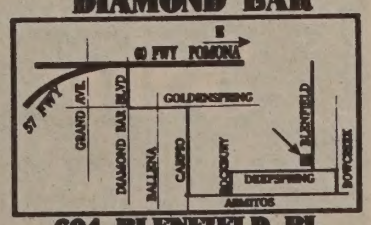

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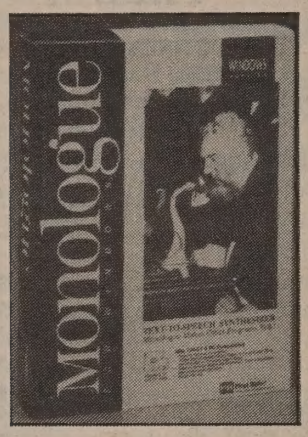

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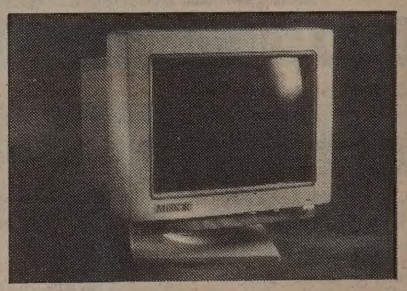

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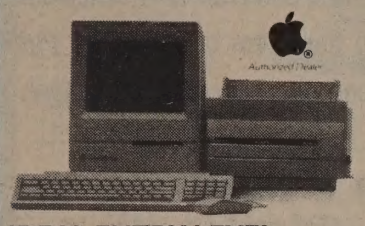

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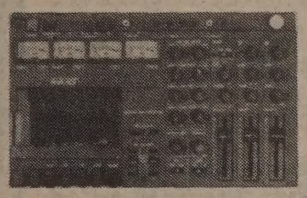

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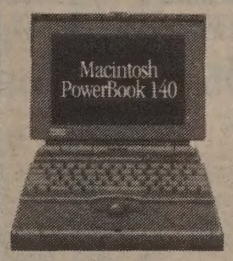

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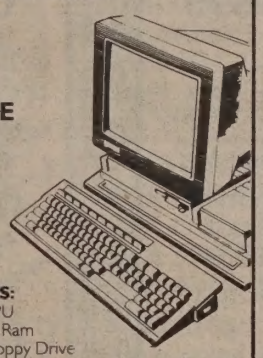

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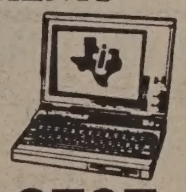

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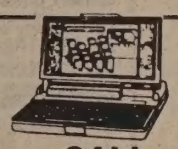

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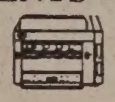

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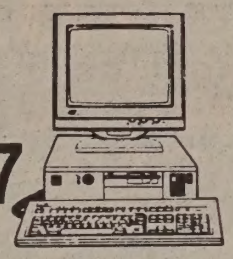

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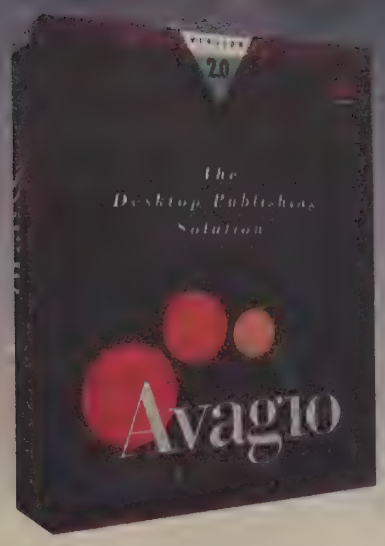

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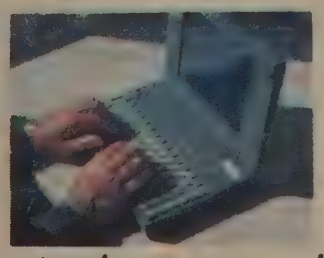

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INDUSTRY INSIGHT

Dawn Of The Baby Blues

BY PAUL HOFFMAN

BIG CAPITALISM FOLLOWS BIG COMMUNISM—IBM TO BECOME AUTONOMOUS REPUBLICS

IBM's reorganization into units with a great deal of independence will certainly have long-term effects on the personal computer industry, and should be seen as good news to PC users. Even if you don't use any IBM hardware or software, the announcement represents a strong new player in the PC field that will be much less encumbered by an old-style bureaucracy than in the last ten years.

At the same time, IBM announced that it will force an early retirement or layoff of another twenty thousand workers, coming after last year's attrition of twenty thousand. This move was made both for cost-cutting purposes and to allow managers of the newly spun-out divisions to work with less corporate overhead. The cuts come across the board, from management to manufacturing to research. IBM's move was applauded by Wall Street and major IBM clients as a method for becoming more resilient in the coming recession.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

It is not clear exactly how the divisions will be split up, but some announcements have already been made. The division of most interest to PC users is Personal Systems, a single division for PCs and workstations, essentially a division for single-user hardware. Another division, Application Business Systems, would be for the highly successful minicomputer line, the AS/400. There will be some overlap between those divisions in high-end PCs that can handle up to ten users, such as those with 80386 and 80486 processors running UNIX. If these two divisions stay separate, you will see significant competition between them for the small workgroup, and it is likely that the PC division will win handily.

This is precisely the type of competition that IBM Chairman John Akers is hoping for. The AS/400 group has a strong following and can probably keep most of its customers happy for many years. In the past, the PC group has always downplayed multiuser PC strategies by releasing cheesy multiuser operating systems that couldn't compete with those from software-only competitors like Santa Cruz Operation and Interactive (whose UNIX operating system group is now part of Sun Microsystems). By releasing uncompetitive multiuser operating systems, IBM could tell its large clients that it was keeping up with the latest trends, while not cannibalizing its higher profit margins on its minicomputers.

Many of the parallels between the new IBM and the new Soviet maybe-a-Union run deep. Although Akers did not need to manufacture a coup attempt, he did have to make both the shareholders (parliament) and large customers (citizens) believe that IBM could not succeed much longer following its present path. He proved his leadership by laying off workers, something that had always been inconceivable in the past, and reaping unexpected profits for it. He made a scapegoat out of his head of operations George Conrades (the KGB), a mainframe man, by replacing him with Robert LaBant, the head of the AS/400 group. The divisions (republics) will still be held accountable to the central office, but they will be able to compete with each other and to make deals with non-IBM companies that were unthinkable until recently.

The PC market may never be the same. An independent PC division would be free to buy chips from any vendor, not just IBM. This

Even if you don't use any IBM hardware or software, the announcement represents a strong new player in the PC field that will be much less encumbered by an old-style bureaucracy than in the last ten years.

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means that IBM's chip design group will probably wither away, except in areas in which they excel, such as high-end CPU design. This will both reduce the price of IBM's PCs and workstations and give major chip manufacturers a much larger market. As IBM accelerates the drop in PC prices, its large competitors like Compaq will have to respond quickly or lose customers who previously only stayed away from IBM due to price. Other effects may be a resurgence in interest in the MicroChannel bus, since the new division may be more aggressive in low-cost licensing so as to build its own market, similar to Sun's licensing of the SPARC CPU.

Who gets OS/2? No one knows. Akers may award it to Jim Cannavino, the head of the new PC division, or he may form an operating systems division across all lines, or he may make a division parallel to the Personal Systems division, for systems software only. They would be responsible for MS-DOS or a clone, and for OS/2, as well as for monitoring and supporting Windows and Taligent (IBM's joint venture for operating systems with Apple).

If there is a monolithic operating systems group that extends from mainframes to micros, you can kiss OS/2 good-bye, permanently. As anyone who has worked with IBM's mainframe operating systems like MVS and VM knows, change is glacial, and significant new versions appear once or twice a decade. On the other hand, if OS/2 and Taligent land in a PC-based group, they will probably flourish. IBM's recent move to make OS/2 work on competitors' hardware will move ahead at a faster pace and Taligent will come out as a significant competitor on many computers, not just IBM's.

PC users should not overlook the other new IBM divisions. For example, the new Storage Products division in San Jose is well respected by IBM's competitors for making high-quality and very reliable disk drives and tape backup systems. Although never cheap, their products are fast and usually incorporate state-of-the-art technologies. With sales of over $10 billion a year, it will be one of the largest employers in Silicon Valley at a time when other disk drive manufacturers are rapidly laying off workers. Although most of its sales come from the mainframe side, the division could become a major player in the high-end PC drive market as it moves the high-end technology down to personal computers.

The cuts come across the board, from management to manufacturing to research. IBM's move was applauded by Wall Street and major IBM clients as a method for becoming more resilient in the coming recession.

PRESIDENT BUSH SIGNS NEW SUPERCOMPUTER, SUPERNETWORK AUTHORIZATION

The United States will spend three billion dollars over the next five years to develop new high-speed computer technologies. The bill essentially authorizes the government to create an extremely fast network between government and university supercomputers. Although President Bush said he would have preferred funding from private industry, it was clear that the recession had prevented any company or consortium from putting up the money.

At the signing, Bush said, "The development of high-performance computing and communications technology offers the potential to transform radically the way in which all Americans will work, learn, and communicate in the future. It holds the promise of changing society as much as the other great inventions of the 20th century, including the telephone, air travel, and radio and TV."

What he failed to discuss was that other countries, notably the European Community and Japan, are already way ahead of the US on setting up large high-speed networks. In addition, Japanese companies are making inroads into the supercomputer market and will pose significant competitive threats within a few years.

After the bill passed, executives from DEC, Apple, and Compaq met with government officials in hopes of broadening the scope of the project past supercomputers. They said the network would be too important just to be used at universities, and should have commercial uses as well. Because supercomputers handle huge amounts of data, the need for being able to share that data is also huge. However, supercomputers address few of the nation's major problems. Allowing other companies to use the network (at a price) would bring us in line with other countries where the high-speed networks are available to everyone.

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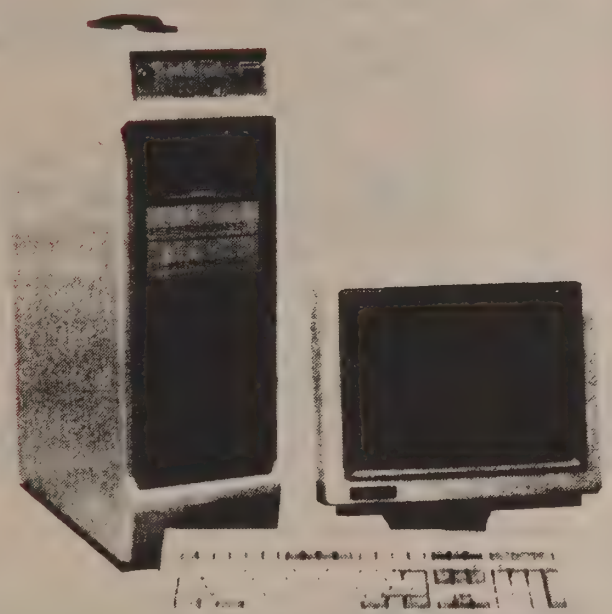

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The funding specified in the bill will be under one billion dollars each year, meaning the network probably won't be finished until the five years are up, if then. As the US struggles with its lack of nationwide communications, other countries will have competitive networks set up within the next three years. There have been suggestions within the US Defense Department that it should sponsor a high-speed national network simply to help its contractors work together better and produce better military hardware. However, with defense spending completely reliant on Congressional approval, such a proposal has little likelihood of passing.

ADOBE'S DOCUMENT INTERCHANGE STRATEGY

Without actually announcing any product, Adobe has made clear its intention to market a technology that will allow users to pass documents between computers, even across incompatible platforms, and have the documents look almost the same on each computer. Some industry pundits are calling this "the ultimate paperless office," although it will fall well short of that. Still, it gives users the first real shot at being able to save a file in a program for delivery to another user without worrying about that other user's computer.

A few attempts have been made at this same principle in the last few years, but with no success. Two Macintosh products have tried and failed. SuperGlue from Solutions Inc. is no longer supported by its maker, and DiskPaper from Farallon was never released, although it may appear some time in the future. Neither of these programs solved all the problems, however. They could only run on the Macintosh, and if the recipient of a file didn't have the same fonts as the sender, the output might look very different than when the original was saved.

Adobe's solution, currently called Carousel, solves all the vexing problems. Basically, on the sender's side, Carousel is a printer driver that creates a PostScript file. The file would contain normal text and some rudimentary form of graphics, and would probably be quite large relative to the document from which it came. Adobe would make Carousel drivers for Windows, for the Mac, for UNIX, and probably for some major MS-DOS programs like WordPerfect and 1-2-3.

Basically, on the sender's side, Carousel is a printer driver that creates a PostScript file. The file would contain normal text and some rudimentary form of graphics, and would probably be quite large relative to the document from which it came.

On the receiver's side, Carousel is a viewing package. The problem of fonts is solved by Adobe's Multiple Master fonts, announced earlier this year. These are special PostScript fonts that are very malleable. If the recipient doesn't have the exact fonts of the sender, the viewing program uses these malleable fonts to make letters that look a whole lot like the letters in the original. Short, fat letters would come out short and fat, tall characters tall, and so on. Each letter would be the same height, width, and slant of the original, making all of the text look very close to the original.

As good as Carousel sounds, it has a major potential problem: Adobe technology has always been very expensive. Adobe is currently selling Multiple Master fonts for $370 and $470 each. This would put the cost of Carousel at over $1000 per computer, a ridiculous price for most people. Other companies may come out with Multiple Master fonts using font conversion technology that is expected from companies like Altsys. Still, Adobe has said nothing about how they will price Carousel, prompting many to worry that it will be out of reach to most users, making it less than universal. If you can only communicate with people who have shelled out big bucks to Adobe, you may be talking to a very limited crowd. ■

Technology News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤The Japanese dedicated word processor market continues to grow rapidly. Unlike users in the United States, many Japanese people do not want a full computer on their desks. The main industry group predicts that they will sell almost three million dedicated word processors during this fiscal year, at an average cost of $1100 per system. That is a 10% sales increase over last year.

➤Fuji Electric has developed an inkjet print head that has twice as many holes as current inkjet printers, yet can print at the same speed. This will give the printers more dots per inch or faster printing, depending on the user's desires. The company will sell the head to printer manufacturers.

➤Seagate announced a new plant in the Nagano Prefecture that will produce about one million hard drives a year. It will also manufacture hard drive actuators. Seagate will spend about $25 million on the plant.

➤Microsoft Japan has caused somewhat of a stink among customers by promoting a $225 upgrade from Multiplan and Works to Excel 3.0, then limiting the number of upgrades to 10,000 after the promotion began. Many people who ordered the upgrade were refused and told to buy the package at its full price, $750.

➤Nintendo expects to export over three million game base units from Japan this year, 50% higher than they had predicted a year ago.

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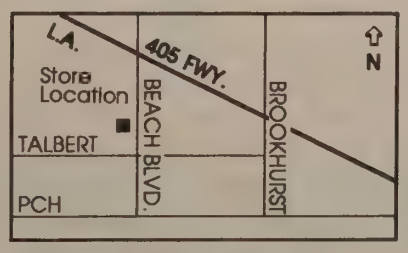

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Borland Keeps MicroTimes Index In The Black

Thanks to a stellar performance by high climber Borland, the Microtimes Stock Index was able to post a positive return during the six-week trading session ended December 12.

The bottom line for our index of thirty-three stocks tracked in the accompanying table: up a relatively strong 31.2 points, or just under 1%, before calling it quits at 3254.85. In stark contrast, the Dow Jones Industrial Average cascaded 110 points, or 3.65%, to 2895.13 as bad winds continued to blow from the national economic cold front.

As aformentioned, Borland stole the show during the period, storming ahead $26.25 a share, or 55%, before finally coming to a close at a new fifty-two-week high of $74.25. Borland completed its acquisition of Ashton-Tate last month, taking the dBase software concern from the ranks of the publicly held. Borland, not surprisingly, was the largest dollar and percentage-gainer of the lot for the period.

IBM, on the other hand, fell to its lowest level in a decade last month, when its stock price contracted $9.38 each, or 9.6%, to a close of $88.63, but not before trading as low as $83.50. Sharply lower sales projections for 1992 coupled with work force reductions of forty thousand employees led to a rash of downgrades by Wall Street analysts last month. The result: IBM had the dubious distinction of being the largest dollar-loser of all the stocks in financial barometer for the period.

Digital Equipment followed IBM's lead and toppled $6.38 a share to $55. Like IBM, layoffs have occurred at Digital, and like IBM, said news was a harbinger of bad things to come for the computer maker's stock price. Autodesk also had a rough go of it last month, as it plunged $9.25 a share, or a heart-pounding 21.8%, to $33.25. The reason: numerous Wall Street analysts cut their earnings estimates for the company last month. The result: Autodesk was the largest casualty on a percentage-lost basis last month. Sun Microsystems rose 4.6% en route to a close of $25.38. The company held an upbeat conference call with investors last month, saying US business remained strong. Dean Witter and Prudential placed "buy" recommendations on the stock following the conference.

In other news, Symantec completed a 2-for-1 stock split last month. Symantec closed the period at $38.25, up $4.38 a share.

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 10/25/91	CLOSING PRICE 12/12/91	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	PRICE/ EARNINGS RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	52 WEEK HIGH	52 WEEK LOW
SOFTWARE												
OTC	Adobe		ADBE	49.63	52.50	2.88	5.79	24	0.32	0.61	63.00	26.75
OTC	Aldus		ALDC	41.00	34.75	-6.25	-15.24	20	0.00	0.00	59.88	24.00
OTC	Autodesk	(L)	ACAD	42.50	33.25	-9.25	-21.76	14	0.48	1.44	62.25	29.50
OTC	Borland	(H)	BORL	48.00	74.25	26.25	54.69	-	0.00	0.00	74.25	25.00
OTC	Informix	(H)	IFMX	13.75	12.00	-1.75	-12.73	-	0.00	0.00	15.88	2.63
OTC	Lotus		LOTS	27.50	22.75	-4.75	-17.27	228	0.00	0.00	40.75	14.75
OTC	Microsoft	(H)	MSFT	89.50	102.00	12.50	13.97	37	0.00	0.00	105.25	48.38
OTC	Novell	(H)	NOVL	42.50	54.50	12.00	28.24	50	0.00	0.00	58.25	15.25
OTC	Oracle	(H)	ORCL	15.38	12.50	-2.88	-18.70	89	0.00	0.00	16.63	5.50
OTC	Software Publishing		SPCO	14.38	15.25	0.88	6.09	-	0.00	0.00	35.25	12.50
OTC	Symantec (s)	(H)	SYMC	33.88	38.25	4.38	12.92	56	0.00	0.00	38.25	12.50
HARDWARE												
OTC	Apple		AAPL	51.25	49.38	-1.88	-3.66	19	0.48	0.97	73.25	39.00
OTC	AST Research		ASTA	22.00	17.75	-4.25	-19.32	8	0.00	0.00	32.75	13.13
NYS	Commodore		CBU	13.75	13.00	-0.75	-5.45	8	0.00	0.00	21.63	8.75
NYS	Compaq	(L)	CPQ	30.25	27.00	-3.25	-10.74	12	0.00	0.00	74.25	22.13
NYS	Digital Equipment		DEC	61.38	55.00	-6.38	-10.39	-	0.00	0.00	83.00	50.38
OTC	Dell		DELL	27.25	27.38	0.13	0.46	14	0.00	0.00	36.25	14.25
NYS	Hewlett-Packard		HWP	50.25	49.50	-0.75	-1.49	16	0.48	0.97	56.63	29.88
NYS	IBM	(L)	IBM	98.00	88.63	-9.38	-9.57	15	4.84	5.46	139.75	83.50
NYS	Silicon Graphics	(H)	SGI	41.38	40.25	-1.13	-2.72	31	0.00	0.00	48.75	22.25
OTC	Sun Microsystems		SUNW	24.25	25.38	1.13	4.64	14	0.00	0.00	38.63	20.75
NYS	Xerox	(H)	XRX	61.00	63.00	2.00	3.28	11	3.00	4.76	66.00	34.13
NYS	Tandy		TAN	28.13	25.00	-3.13	-11.11	10	0.60	2.40	36.50	23.38
CPUs												
NYS	Advanced Micro Device	(H)	AMD	10.38	15.75	5.38	51.81	-	0.00	0.00	15.75	4.00
OTC	Intel		INTC	42.50	43.50	1.00	2.35	11	0.00	0.00	59.25	34.75
NYS	LSI Logic		LSI	7.75	7.50	-0.25	-3.23	-	0.00	0.00	12.50	5.38
OTC	MIPS		MIPS	9.38	8.50	-0.88	-9.33	-	0.00	0.00	20.88	7.50
NYS	Motorola		MOT	62.50	60.38	-2.13	-3.40	18	0.76	1.26	71.25	45.75
COMMUNICATIONS												
NYS	AT&T		T	38.00	37.88	-0.13	-0.33	59	1.32	3.49	40.38	29.00
NYS	BellSouth Corp.	(L)	BLS	47.50	49.50	2.00	4.21	16	2.76	5.58	56.25	45.38
OTC	MCI		MCIC	26.38	27.63	1.25	4.74	14	0.10	0.36	31.88	17.88
NYS	Northern Telecom	(H)	NT	40.63	44.38	3.75	9.23	23	0.32	0.72	46.25	26.25
NYS	Pacific Telesis		PAC	39.88	42.25	2.38	5.96	16	2.12	5.02	47.00	38.50

NOTE: ASHTON-TATE WAS ACQUIRED BY BORLAND AND WAS REMOVED FROM OUR LIST. SYMANTEC COMPLETED A 2-FOR-1 STOCK SPLIT.
KEY: NYS=NEW YORK • ASE=AMERICAN • OTC=OVER THE COUNTER • (H)=NEW HIGH REACHED IN PERIOD • (L)=NEW LOW REACHED IN PERIOD • (s)=STOCK SPLIT

MARKET DIARY:

MOST ACTIVE ISSUES:

ADVANCES	15	LARGEST DOLLAR GAINER	Borland $26.25
DECLINES	18	SMALLEST DOLLAR LOSER	IBM $-9.38
UNCHANGED	0		
NEW HIGHS	10	LARGEST PERCENTAGE GAINER	Borland 54.69%
NEW LOWS	4	SMALLEST PERCENTAGE LOSER	Autodesk -21.76%

CLOSING QUOTES FOR CHART:

	CLOSE 10/25/91	CLOSE 12/12/91	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3223.68	3254.85	31.17	0.97
DOW JONES INDUSTRIAL AVERAGE	3004.92	2895.13	-109.79	-3.65
STANDARD & POOR'S 500 STOCK INDEX	384.20	381.55	-2.65	-0.69
N.Y.S.E. COMPOSITE	211.82	210.44	-1.38	-0.65
NASDAQ COMPOSITE	525.13	536.02	10.89	2.07

DATE	MICRO TIMES	DOW JONES
05/06/91	3209.84	2941.64
06/05/91	3178.90	3005.37
07/05/91	2850.09	2932.47
08/02/91	3132.83	3006.26
08/29/91	3265.70	3049.64
09/27/91	3216.77	3006.04
10/25/91	3223.68	3004.92
12/12/91	3254.85	2895.13

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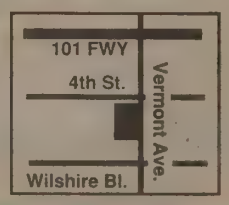

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Freedom Vs. Privacy?

BY JIM WARREN

Each month, this concerns what we haven't done, but could—for better or worse. Not hobbled by consistency, this particular column promotes conflicting ventures.

For well over half a century, your phone made you a sitting duck, even in the deepest recesses of your home. You were an easy target for any intruder who could discover your number—just like your doorbell, except intruders didn't have to walk over.

In the last decade or so, the answering machine's call-screening feature became the Great Equalizer. It's the peephole allowing you to covertly watch callers' comments before answering. All you have to do is subject every caller to a message of arbitrary length that's totally unneeded when you're listening.

REALIZABLE FANTASIES

Copyright © 1991 by Jim Warren, 845 Swett Rd., Woodside, CA 94062. All rights reserved. *Jim Warren founded* InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford, before the tax-paid overhead ripoff), medical information science (UC Medical Center), and mathematics. He is also a member of the Board of Directors of Autodesk, Inc.*

He organized and chaired the recent First Conference on Computers, Freedom & Privacy, sponsored by a dozen nonprofit and industry organizations, and is currently chairing Autodesk's CEO-Search Committee.

Call-screening is useful against unwanted intruders, but it's rather impolite for friends. Its protection is somewhat akin to answering every knock at your door with a six-shooter pointed at each daring visitor.

Recently, where permitted by utilities regulators, the RBOCs—regional Bell-telephone operating companies—have begun offering "caller ID." This allows you to identify the phone number from which a caller is calling. (You *have* memorized the phone numbers of everyone you want to talk to, haven't you?)

This has been available for some time to businesses that pay the charges when you call them via an 800 number. They get to capture your phone number and use it as they please. Ditto for 911 emergency-number calls. In both cases, most users are unaware of this "covert surveillance." If you want to hide your identity, don't call 911 or 800 numbers.

Controversy surrounds caller ID. Many people—even telemarketers—want to remain anonymous when they call a business or hotline. Those desiring covert calling capability have urged that, if caller-ID services are to be permitted, they should be balanced with a service inaccurately named "call blocking." Despite its name, call blocking does not permit you to block calls. Instead, it permits your anonymous callers to block you from seeing their phone number.

ENTREPRENEURIAL PHONE OPPORTUNITIES

Escalating this phone war, the next weapon will obviously be a phone that you can set to refuse calls unless it receives the caller's phone number.

And if you haven't memorized the nation's phone books, you can route that caller ID into your PC's computerized phone directory to see who's calling. There are numerous ventures now underway to "publish" entire regions' phone "books" on CD-ROMs; several are already available.

Whooppps! That's a database of personal information—another politically incorrect information technology. But computerized phone books could replace environmentally incorrect paper phone books. *Oh!* I'm *so* confused.

Of course, the RBOCs get to charge for each new service. And we computer entrepreneurs get to profit from each new infoweapon. Perhaps the most positive aspect of this ever-escalating privacy war is that most of it doesn't yet consume massive tax funds. And so far, its profiteers aren't DOD contractors.

INTELLIGENT CALLER ID

Here's a more positive variation on the caller-ID option, suggested by Roger Schlafly of Soquel. With or without call-blocking, expand caller ID to include a type-of-call code—personal, emergency, return call, business, unsolicited sales call, low-priority message, computer-generated "robot" voice-message, modem, fax, etc.

Intelligent answering machines could then use this type-of-call

There are numerous ventures now underway to "publish" entire regions' phone "books" on CD-ROMs; several are already available. Whooppps! That's a database of personal information—another politically incorrect information technology. But computerized phone books could replace environmentally incorrect paper phone books. Oh! I'm so confused.

code to decide how to treat and route the incoming call.

And, people favoring ever more government "protection-against-everything" could advocate laws prohibiting false use of these codes—just as laws require truth in advertising.

"GOOD" ROBOT PHONE CALLS

As of this writing, Congress was finishing legislation to prohibit those infuriating computer-generated telemarketing phone calls. But will it be carefully crafted legislation, or just a ham-fisted blanket prohibition on *all* automated calls?

Will it prohibit automated calls for which you have granted prior permission? Wake-up calls, etc.? (Probably not.)

How about automated public-agency calls concerning events or plans directly affecting you or your home or your community? Will sloppy legislative phrasing prohibit "Evacuate now!" calls that could help in disasters such as the Oakland firestorm? What about warnings of nearby street closings for repairs? Notices of hearings about property development planned in your neighborhood? Or of major changes proposed for your school's programs? How about schools' increasingly used automated calls notifying you of your child's absence? (Ahh, if kids could only vote!)

What if a public agency can't afford to—or doesn't want to—actively keep its citizens informed of major events impacting them? Will ill-phrased legislation prohibit community groups from using electronic "volunteers" to contact you about plans with an impact on your community?

The solution may be to regulate commercial speech differently from noncommercial speech—a practice well established in law. If so, should funds solicitations and raffle-ticket offers be treated the same as sales calls? What about automated telephone polls? What about political advocacy communications, which delineates a free society from a totalitarian state?

The question is: What limits do you want on your Freedom of Speech in order to protect your Right to Privacy—and precisely how should those limits be imposed on modern communications?

A "STOLLIC" VIEW

Cliff Stoll (author of *The Cuckoo's Egg*) and I were among those invited to testify at some "Right to Privacy" hearings of the state Senate Judiciary Committee last December. After the hearings, we chatted for a while about freedom, privacy, and community. He concisely posed a view that I find true—and compelling:

When we enter a community, we give up some of our privacy. The more we participate in our community, the more privacy we give up.

Thus, the question becomes: How shall We, the People, protect our ability to communicate within our communities, while also protecting ourselves against unsolicited communication from our communities?

FOSTER FLIGHTS OF FANCY

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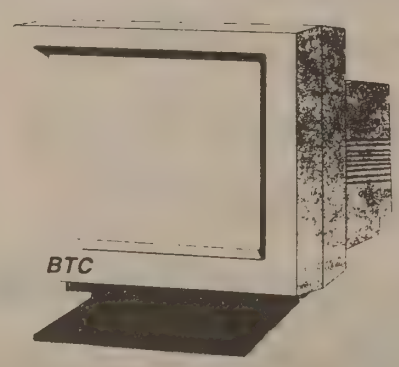

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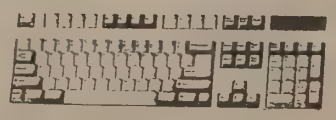

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BY ED KAHN

There is no doubt that while the number of people using laptops as their only computer is growing by leaps and bounds, there are still many users of portables who use them in conjunction with a desktop machine. I love the little computers, but nevertheless rely on my desktop machine for the lion's share of my work. For me, the beauty of the notebook computer is that I can take files with me and then transfer the modified data back to my desktop when I return to my home office.

Over the years there have been at least a half dozen contenders for the number one spot in the file transfer utility market. But the winner has always been Traveling Software's LapLink. Although it has been the most widely accepted transfer utility, it has not necessarily been the best. There were individual features in competing products that I personally preferred, but nevertheless, like so many others, I stayed with LapLink through all of its releases because, overall, it suited my needs best.

Now Traveling Software has come out with LapLink Pro, a new and completely revised version of its software. They have stolen all the thunder from the competition to produce a product that does all you could want in this class of software.

LapLink Pro works by connecting two computers together with either a serial or parallel cable, and then invoking the software on both machines. The 8' serial cable, redesigned by Traveling Software, accommodates any combination of either nine- or twenty-five-pin ports. The new parallel cable allows a faster transfer rate than before. But the most important change in connecting computers is the ability of the new software to automatically detect which port is being used.

Although it was usually a simple matter to tell the old software which port was being used, in fact, the automatic detection is a great convenience. Many times in the past, I have connected two computers together only to find that the systems were not communicating. I would end up changing the port selection several times before transfering the files. On many portables, the ports on the back of the computer are not identified, making it difficult to know just which serial port address has been assigned to a particular port. With the new software, all you do is plug the appropriate cable into the ports on each machine. This is pretty foolproof, as you cannot easily plug a serial cable into a parallel port.

Once the computers are connected, you simply call up the program on each machine. Each will display a split screen listing both sets of directories. If you are connecting to a machine that does not have the program, you can clone it if you are using serial ports. (The parallel connection offers a faster transfer rate, but you cannot clone through that port.) Instructions on-screen guide you through the simple cloning process. Once you have the program installed on both machines, the rest is a breeze. If you are ever in doubt, just hit F1 and context-sensitive help appears. If you play around with the program for a few minutes, calling for help when you are not clear about what to do, you will find the program simple, powerful, and intuitive.

The old version of LapLink actually let you do everything you needed to do, but I always wished a few operations were easier to accomplish. Now they are. For instance, if you have a subdirectory on each of the two computers and files have been modified in each, a new command allows you to synchronize the two subdirectories, automatically picking the newer version of all files regardless of which computer it is on. This is definitely a time saver. This command makes

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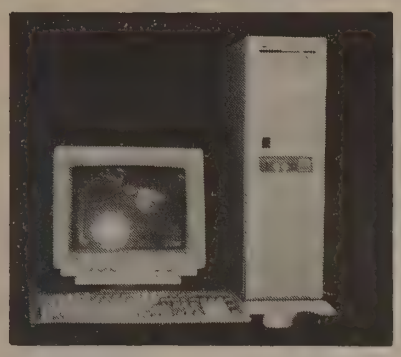

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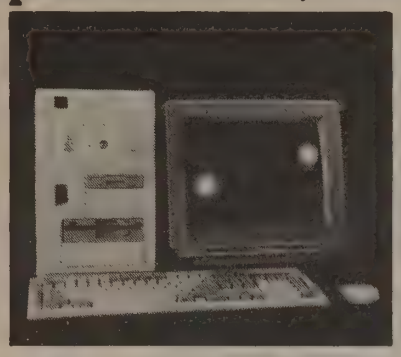

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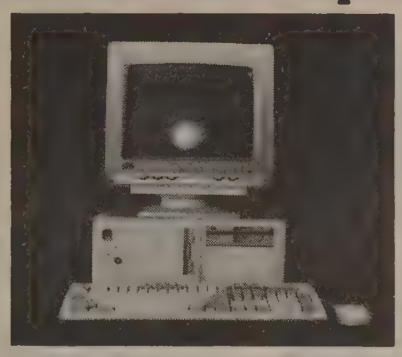

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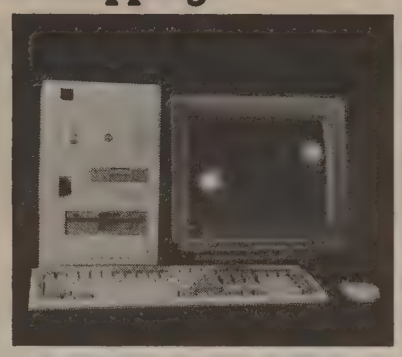

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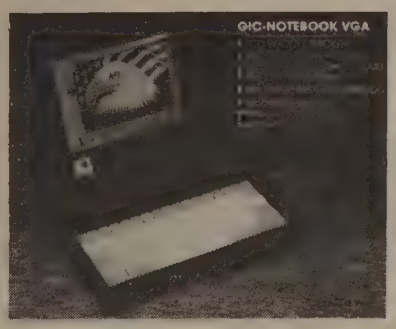

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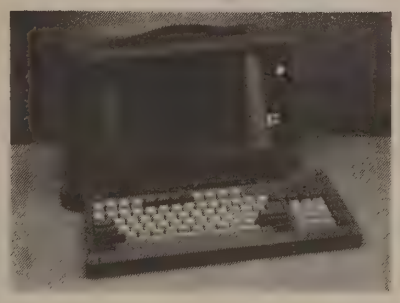

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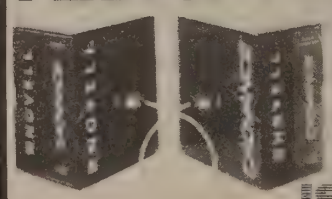

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the two directories identical.

Another addition is a simple text editor. In the earlier version, you could view files, but, annoyingly, you had to leave the program in order to modify them. Now you can edit files from within the program.

The entire look and feel of the program is new, with pull-down menus and dialog boxes. It's easy to get around in the new program. I was able to accomplish everything I needed to do without referring to the documentation. In the end, I read the manual and found strengths to the program that I had not seen on my own. For instance, one of the new features is the ability to use the program through a modem.

LapLink Pro has a simple text editor. In the earlier version, you could view files, but, annoyingly, you had to leave the program in order to modify them. Now you can edit files from within the program.

The procedure for connecting two computers over a modem is a bit more complicated and in fact nearly requires that you have two phone lines: one for the modem and one for voice communication between the two operators. This is not a program designed for remote access to another computer, but it is definitely a useful feature when you need to coordinate two computers at distant locations. Keep in mind, however, that modem transfers are considerably slower than hard-wired transfer. LapLink Pro has a data compression feature that compresses files before transfer and decompresses them before installation on the second machine. This speeds up transfers, especially when you are using a modem.

There are many wonderful features to this transfer utility, but, stated simply, if you have the need to transfer files from a portable to another machine, this is the program to get. This program has come of age. ■

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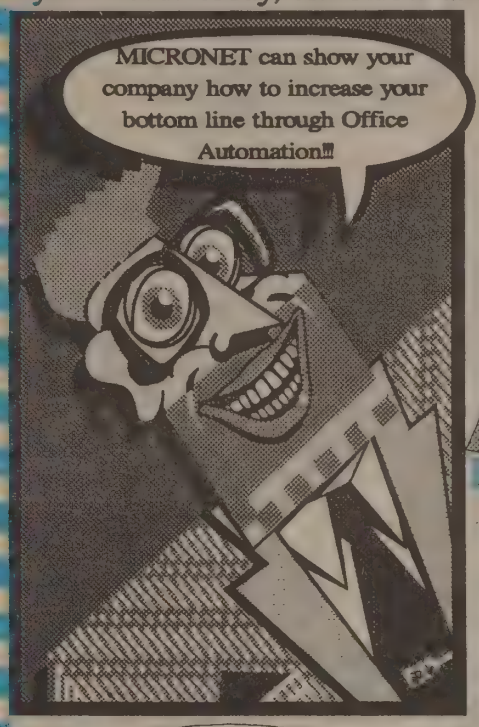

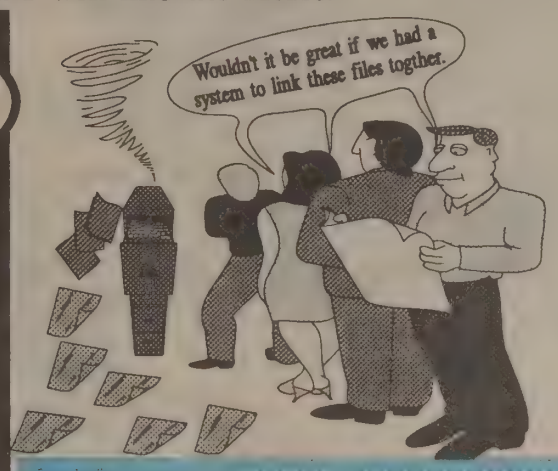

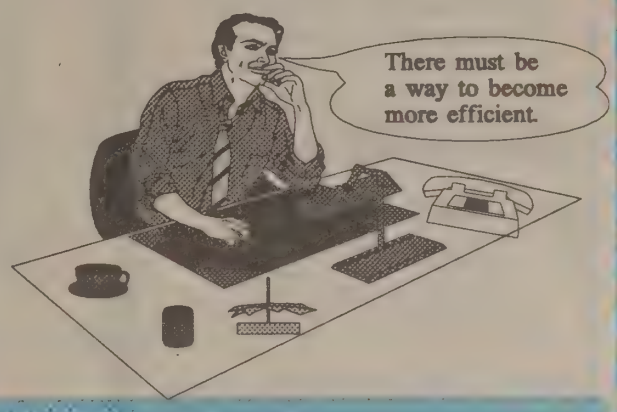

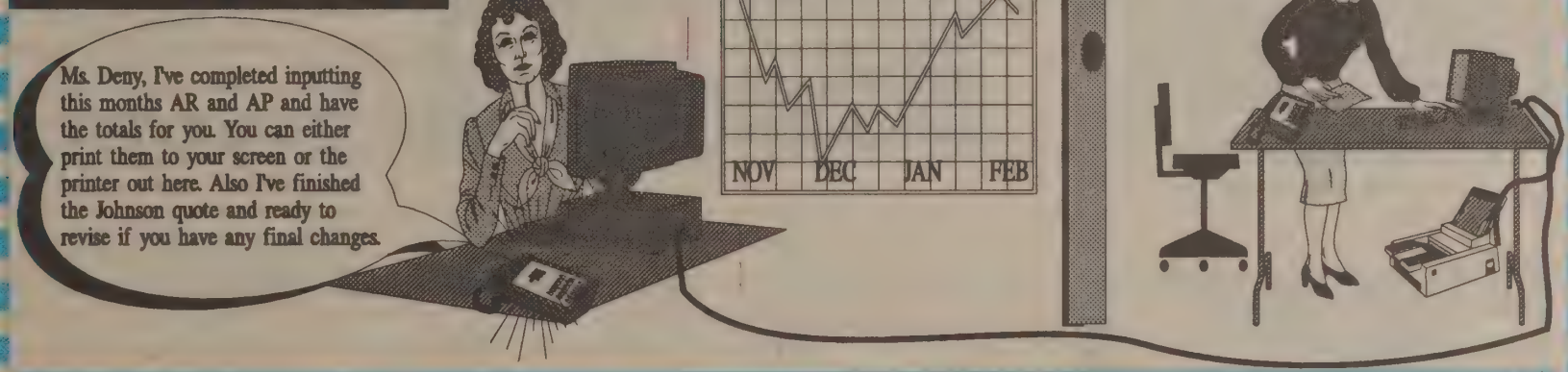
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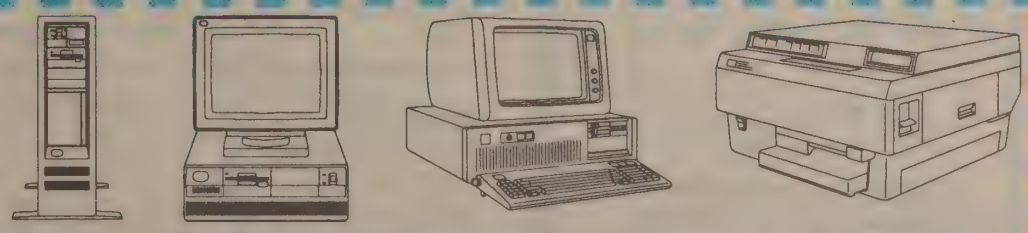

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Computer Of The Month:

Fora's NBX-386S/ 25 Notebook

The notebook is the fastest moving segment of an already fast-paced computer industry. With the achievement of reasonably small-sized notebooks, the push these days is for longer battery life and greater energy efficiency. For years, Intel had the 386 chip market pretty much to itself. But now Advanced Micro Devices is making major inroads and promises to accelerate the trend with the introduction of new energy efficient chips.

Fora's NBX-386S/25 is built around AMD's 25MHz SXL chip. One advantage of this chip is that it draws 35% less power than a conventional 386. Another is that the microprocessor can be put into a standby mode in which the clock is stopped and the processor consumes virtually no electricity. This allows you to let the computer enter a sleep mode and return to full operation with the touch of a key.

Fora's notebook computer can run for up to eight hours by using the built-in rechargeable NiCad battery plus the optional add-on battery ($175), which adds an additional 2lbs. to the 6lb. package. In addition, you can power the system with the included AC adapter that also recharges the NiCad batteries.

Although this computer comes in a small package, it packs a lot of power. It comes standard with 4MB of RAM, expandable to 8MB. It also has a 60MB hard disk. An 80MB model is available for an extra $200.

The system has an exceptionally clear, paper white, VGA display that measures 10" diagonally and supports thirty-two gray scales. If you want color, it is easy to attach a color monitor through the VGA port which supports Super VGA display.

They keyboard layout is the weakest part of the unit. While there is a full 81-key keyboard, it's necessary to use a Fn key, in addition to cursor movements, to get PgUp, PgDn, Home, and End. I find this cumbersome. Most of the notebook computers have gotten away from this design as it is particularly awkward for writers. Fortunately, however, it is possible to attach a keyboard of your choice through the keyboard/keypad port.

While Fora has provided only one serial port, they do offer an optional internal fax/modem ($395), so you can use both a modem and a mouse. With the popularity of Windows, it is essential that manufacturers provide either two serial ports or the option of a built-in modem. There is also a single parallel port, but it is set up a bit differently than most. Rather than the standard twenty-five-pin parallel port, they use a mini port that takes up less space. A pigtail adapter is provided that plugs into the mini port and then provides a standard twenty-five-pin port on the other end. It all works fine, but you have to be sure to have the pigtail with you or you will not be able to connect to a printer. This port can also accommodate an external disk drive.

This is a powerful computer that represents a new step forward in technology. If you need a fast notebook computer that offers long battery life, this model is definitely worth considering. ■

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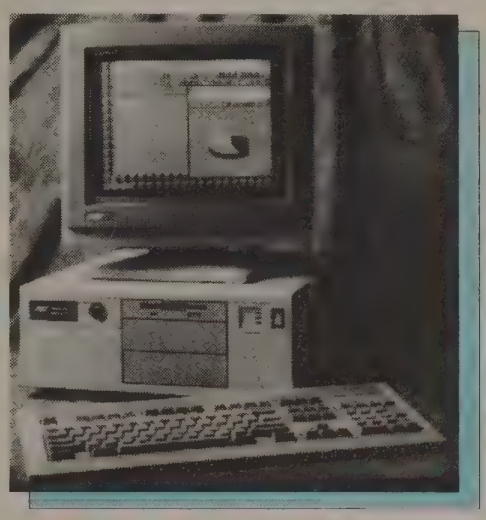

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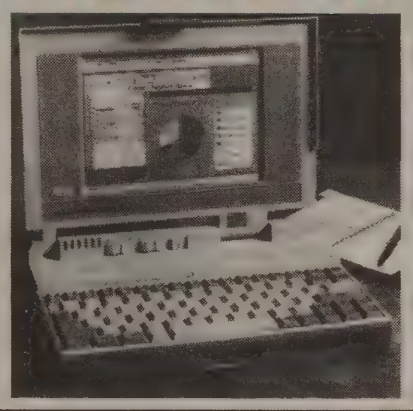

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Securing Your System

Your Password Is Your First Line Of Defense

BY KATE COADY

What's your password?

Unless you understand the most common system-breaking attacks, there's a good chance you picked your password because it was easy to remember. There's nothing wrong with that, per se. The problem is that easy-to-remember is too often synonymous with easy-to-guess.

The opposite condition, hard-to-guess and hard-to-remember, is also common. It may—perhaps surprisingly—be equally un-secure. Saying that a password is hard to remember is usually just another way of saying it's written down somewhere where it will be easy to find. The authorized user may not be the only one who finds it.

There are many aspects of system security, and many different ways of breaching it. Why start with passwords as opposed to, say, file permissions, or loopholes in the operating system? The reason is that providing password security plugs more holes faster, and is more cost-effective, than any other approach.

Exploiting ill-chosen and poorly protected passwords is one of the most common attacks used by crackers (i.e. people who break into computer systems). Almost every multiuser system uses passwords to protect against unauthorized logons, but comparatively few installations use them properly. The problem is universal in nature, not system-specific; and the solutions are simple, inexpensive, and applicable to any computer, regardless of operating system or hardware. Anyone can understand them, and it doesn't take an administrator or a systems programmer to implement them.

Tips For Picking Safe Passwords And Keeping Your System Intruder-Free

The key to understanding password security is to realize that most attacks on it are nontechnical in nature. They are based on understanding the user, not on understanding the machine.

COMMON SYSTEM-CRACKING TECHNIQUES

In order to log onto a computer as somebody you're not, you have to give it a valid username and valid password. Anything you don't know, you're going to guess. This is the primary approach favored by people who break into systems. A related technique involves the would-be intruders broadening their knowledge of the target operation, so their guesses are more likely to be right.

The fundamental countermeasure is make it hard for the cracker to guess the password, and hard to find it by other methods as well.

Secondary countermeasures involve restricting physical access to the target machine, and restricting available knowledge about the operation. The latter technique works a lot better for some kinds of organization than for others.

If the system is online (in this case, this means it's on a network, reachable by phone, or otherwise accessible without getting into the physical facilities of the target organization), or if the invasion is an inside job, perpetrated by an employee or other legitimate user, the assault is much more difficult to defeat. If both of these are true and the system breaker is a programmer, saying you have a problem is like saying the Atlantic Ocean is damp.

Let's examine two situations: that of an outsider who has discovered a target system and is trying to break in "blind," knowing nothing but its phone number, and that of a corrupt employee who already has an account, and wants to gain privilege for dishonest ends, trying to break into high-level accounts using considerable inside knowledge and access to the premises. We won't consider specific techniques demanding significant programming ability.

Note that although there is no dialup access to the system in the insider example, almost all the techniques described can be used against dialup systems by outsiders as well as by insiders. Also, an outside cracker can easily acquire some of the knowledge, such as personal data about employees, that appears in the insider example.

CASE #1: THE OUTSIDE DIALUP

A system that's online is vulnerable to attack as long as it's up, which may be nearly all the time. Adding to the system administrator's troubles is the fact that the talent pool of potential crackers is limited to those within reach of a phone line—i.e., most of the known world.

An outsider attempting to crack your system by dialup access is probably handicapped by limited knowledge of your operation. Given two organizations with equivalent security, if a would-be cracker has comparable knowledge of each, the larger is more vulnerable to dialup cracking.

Why?

One reason is a result of cracker culture. It's much more prestigious for crackers to be able to boast to their friends that they broke into Very Large Automobile Co.'s computer than it is to tell them they broke into Schneider's Garage, so they'll expend more energy on it. Also, those with economic motives are sometimes more likely to target a large system because they're more likely to know what the organization does, and which competitors might be interested in buying stolen information.

The other reason is simple probability. Put yourself in a cracker's place for a minute. You dialed a number, you got a modem carrier, and now you're looking at a screen that says "Welcome to Schneider's Garage. Username:".

You don't know anybody there, so you're going to have to guess usernames...which are often first names, or last names. You start trying common names. What are the odds that Schneider's Garage, which employs a dozen people, employs somebody named Rick? or Al? Well, who knows, but the point is, it's low compared to the probability that VLA Co. employs at least one Rick.

Maybe they don't use first names or last names. Perhaps they use handles like EMP008. You might be able to go onto the net and collect valid usernames from email and articles written by users at VLA Co. (user@vla.com), in which case you won't be guessing. You have more

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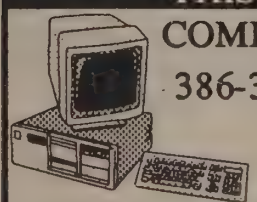

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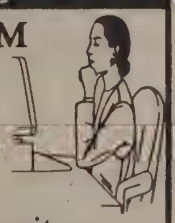

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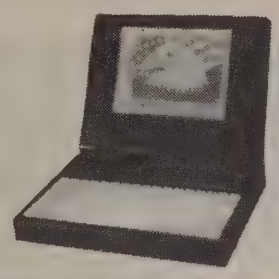

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chance that VLA is on the net to begin with, and more chance of encountering something with a VLA username, than you do of finding anything from Schneider's Garage.

If you do get in, your intrusion is less likely to be noticed at VLA than it is at Schneider's, because one strange login among hundreds is a lot less visible than one strange login among a dozen.

Password guessing works the same way as username guessing. The odds of any given password showing up on VLA's computer are much better than the odds of its appearance at Schneider's.

How do you get computer phone numbers, anyway? You can trade information with other crackers; you can start dialing numbers in the exchange, especially those near the company's published voice number, and see if you get a modem. You can call up the voice line and pretend to be from the phone company, saying you had a report of trouble on the modem line, and can they verify what the number is? You can root around in the phone company dumpster for the datagrade line list. There are some phone number databases that include unlisted numbers.

Crackers like to know what kind of a system they're trying to log onto. For example, if VLA's computer announces that it's running UNIX, that also means a cracker will know the superuser's account is named "root."

What can be done to defeat this?

Most of the following tactics have to be implemented by an administrator, but I think they are also valuable for users to know about, because they illustrate vulnerabilities of data in transmission.

•**Don't use obvious passwords**, like the names of cars, parts, or tools for VLA and Schneider. (Also, see the cautions in the insider example about other dangerous passwords.)

•**Get a modem number that's substantially different from your voice number**, and never give out your modem line number unless the nature of your business demands it. If your voice number is 555-1111, 555-1112 is an obvious place to look for the modem line. Try getting a number farther away from your published voice line, maybe even in the 556 exchange instead of 555.

•**Set your modem to answer on a late ring**, not the first or second. Most crackers doing random-dialing searches for modems will assume that a line that isn't answered in the first few rings is a voice line.

•**Callback modems**, in which the main computer takes an incoming call, hangs up, and calls back the user's previously stored and authorized phone number, can be a help. However, they should always be used in conjunction with other good security practices, not instead of them. At least one brand of callback modem is known to have a back door allowing an unauthorized user to bypass it. Also, many crackers are also phone phreaks (phone system hackers), and the callback mechanism itself can be defeated by rerouting the return call.

The same caution goes for encryption boxes, an expensive option in any event, since you need one on each end: one to encipher, one to decipher. This at least means your passwords aren't going over the line in the clear. I have no specific information indicating that any encryption boxes are known to have back doors, but I know how programmers think because I am one. Don't assume the back doors aren't there.

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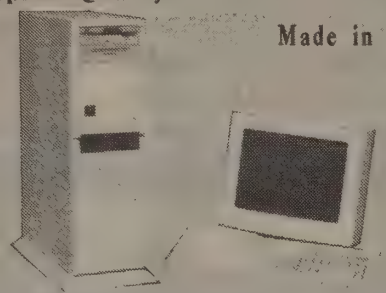

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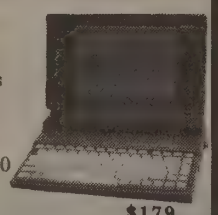

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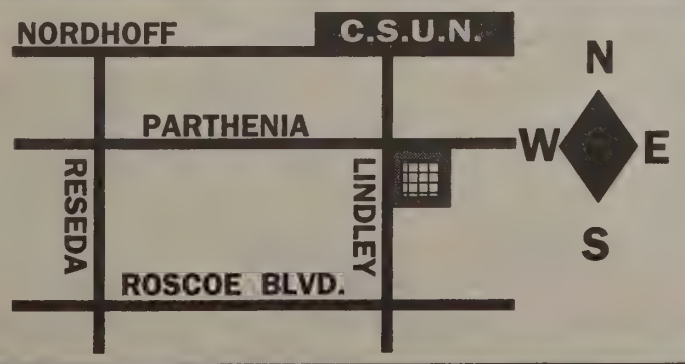

•If you can deny root access from a phone line, do it. Some systems allow you to prevent the system administrator from logging in on certain ports. If you have one of these, prohibit the administrator from logging in on a dialup line.

•If you can keep your system from announcing that it's Proprietary Operating System 5.07.02, or whatever, before someone logs in, do so. This keeps the cracker from knowing the names of the administrative logins, and what kinds of attacks are likely to be successful.

•If your system allows users to list who's logged on before they log on themselves, disable this feature if at all possible. It provides the cracker with a list of valid usernames.

•Don't put your company name in the welcome message. That may help an intruder pick likely passwords, and if you're a well-known company, it may provide more incentive to break in.

•Don't publish your usernames. Keeping usernames secret isn't something most systems are designed to facilitate, but if you're not on a net sending electronic mail off-site, you might make usernames a little obscure.

•Prompt for a password regardless of whether the username is valid. If you can configure your system so that it asks for a password immediately after a username, whether the username is right or not, do so. That means someone guessing usernames and passwords has to get both of them right simultaneously, which is harder than guessing them one at a time.

CASE #2: THE INSIDE JOB

Let's take another scenario.

The computer isn't online, and somebody wants access to your particular system. They have to get into the building to do that. This is easiest if the system breaker is an employee, although it can be accomplished by breaking and entering, repairing or pretending to repair/inspect something, or plain old chutzpah.

Let's say the culprit is an employee who wants to do something with the records he isn't allowed to do. He has a low-privilege account. What does he do to get enough privilege on the system to accomplish the intended malfeasance? There are several possibilities.

•Leave a phony login program running on a terminal. It looks just like the usual login program, and when somebody tries to login, it mails the password to the guilty party, gives the user the same error message as the regular login program does when you type the password wrong, and exits. The next log in prompt the unsuspecting user sees is the real one. The idea is to get passwords of users with more privilege than the culprit has. This requires a little programming capability, but on some systems you wouldn't have to know anything more than basic commands to accomplish it.

As possible countermeasures, the administrator could monitor the system to check for strange programs running on unattended terminals, and configure the system so that it gives a unique response to each user that other users don't know about (sort of like a password in reverse). Users should make a practice of checking their last login date each

Continued on page 132

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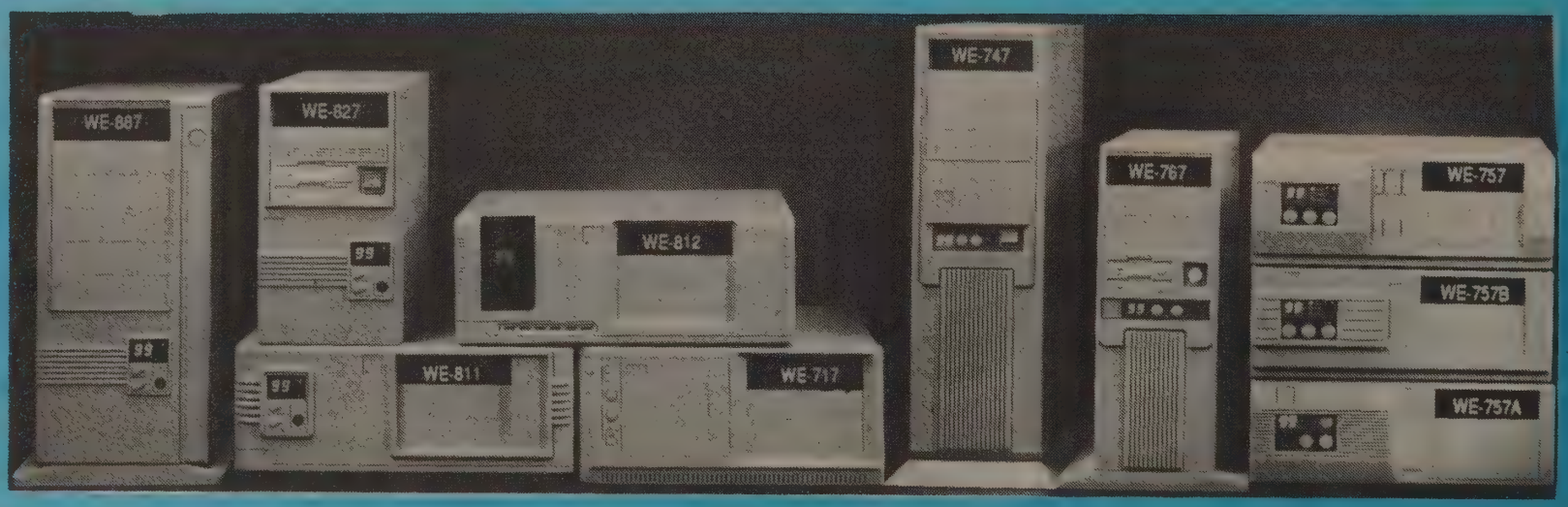

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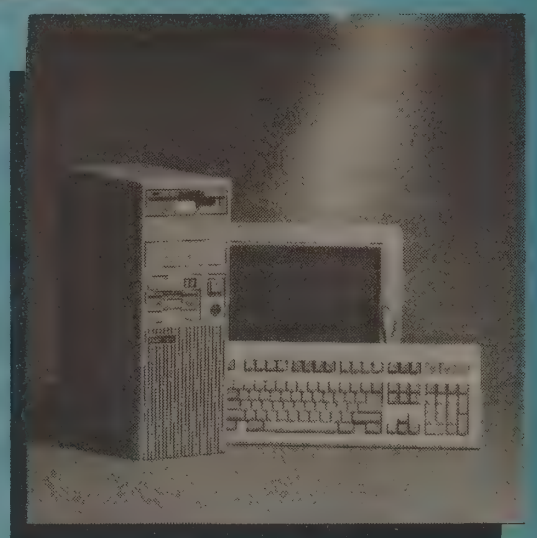

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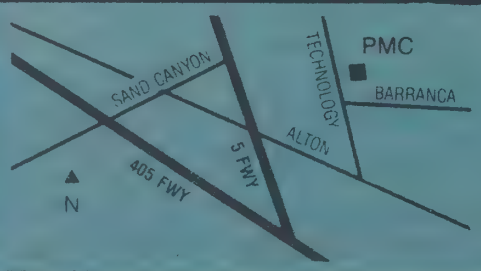

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What's On Your Network?

Reduce Your Upgrade And Configuration Headaches With Network Management Tools

BY WAYNE A. YACCO

Planning to move your large, widely distributed Mac network to System 7? Just think of the fun you're going to have running the compatibility checker on all those computers. Of course, it might not be all fun unless you have a lot of very sophisticated users to collect the data for you, or unless your users are the sort of forgiving, charitable folk who don't mind waiting forever for the network printer, or...well, you get the picture.

On the other hand, you could turn to MacVONK. MacVONK is the developer and purveyor of NetOctopus, a nifty network management system that can be an immense help with any network upgrade—from a single application to a complete operating system.

NetOctopus isn't a network monitor, but it isn't limited to assisting with upgrades either. The information it gathers includes Mac model, processor, math coprocessor, RAM, drive brands and capacities, the number of monitors and their type, keyboard type, and NuBus cards. This information can be used for inventory, maintenance, or trouble shooting. In addition, though, NetOctopus allows you to remotely restart or shut down any Mac on the network. You can even modify the system heap or set the time for these machines.

LOCAL AREA NETWORKS

NETOCTOPUS AND THE TRANSCONTINENTAL MAC NETWORK

Devan Dewey, a senior system analyst at CenterLine Software, has been using NetOctopus for forty-five days—first as a beta site, and, since mid-October, with the currently shipping product. He is currently responsible for administering networks at CenterLine, a developer of UNIX software. His users are running system 6.0.7, and he's preparing to upgrade them all to 7.

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The company's ninety LocalTalk workstations are connected at each site by an Ethernet backbone. Fifty to sixty are in a pair of zones in Cambridge, MA; another ten are in a zone in McLean, VA; and fifteen more are in a fourth zone in Mountain View, CA. The offices are connected via an IP Internet (TCP/IP protocol for Ethernet's transport layer). Running the compatibility checker, not to mention upgrading, for all the machines in this network would normally be a complicated pain in the administration.

Dewey uses NetOctopus information about software and hardware, including system software and extensions in the system folder, to look for problem areas on each Mac. "Believe me, it is a dream come true for someone who has to administer Macs over a 3000-mile area," he says. Users themselves typically have no idea that changes or additions to the files in their system folder—often as a result of running an installation program—can cause them trouble. NetOctopus can detect the introduction of applications that can cause these conflicts. In addition, the software's built-in version of the System 7 compatibility checker lets Dewey check all the Macs on the network for compatibility. He then uses NetOctopus to delete or update conflicting software on the remote Macs.

"This weekend," Dewey told me recently, "I'm going to upgrade all the Macs on the network across the country to the System 7.0 LaserWriter driver so we can begin our migration to System 7." Dewey explained that the reason this preliminary upgrade is so important is that the System 6.0.7 driver and System 7 drivers are not fully compatible. If both drivers are on the network together, a printer reset occurs every time there is a driver change between jobs. Each reset takes from two to three minutes—more time than many short jobs.

Another use for NetOctopus is finding dirty ROMs or applications that are incompatible with the system's 32-bit addressing mode. The administrator can let a user know if he or she needs to turn the 32-bit mode off to run an incompatible application like MS Excel 3.0.

The program's features can also be employed remotely via asynchronous communications, using software like Apple's new AppleTalk Remote Access or Shiva's Dial-In Access. Dial-In is bundled with Shiva modems including the NetModem/E (which can connect the remote Mac running NetOctopus directly into the network).

Security functions are built into NetOctopus. Its user inits are serialized. This keeps any unauthorized version of NetOctopus from controlling the network. Furthermore, the application has the ability to enable sub-administrators—each with their own level of access and privileges. Separate administrators can be assigned to each zone or to groups of individual users.

The NetOctopus database can also be exported for analysis with other software, or presented in printed reports. The program can generate tab-delimited files for importation into other databases or into spreadsheet applications. Its templates allow you to put any mix of NetOctopus information into custom reports.

PC CENSUS

Similar applications are available for the IBM PC and compatibles. PC Census, for instance, offers comprehensive tools for acquiring and maintaining inventory data. Unfortunately, it doesn't have NetOctopus's ability to control nodes, manage files, or update software over the network.

Larry Dubisz, a resource analyst, is using PC Census at one of the nation's top ten life insurance companies to plan the creation of a network that will replace host-connectivity. The present system consists of 3270 PS/2s connected to an IBM 3090 model 720J through 3174 control units. The system which will replace it will be a token ring network with departmental servers. Eighty-five to 90% of the nodes will still access the mainframe.

Between five hundred and eight hundred machines located in the Illinois-based insurer's five-story corporate facility will be involved. The network will use existing twisted pairs in the building's wiring closets to connect the system throughout the four wings on each

floor. Fiber optics will connect the floors to each other and to a main computer center located in a second facility across a street.

Dubisz uses PC Census to detect DCA Irma cards, token-ring cards, and software on the machines to be converted. "Someone's going to come to me and say, 'I'd like to be connected to the mainframe.' Unfortunately, there's a lot of people out there who don't know what kind of configuration they have. They don't even know if there's an available expansion slot. You should see the expression on their face when I pull down all the details. I know more about the system they use every day than they do."

He is also concerned about detecting software that could introduce viral attacks. However, his biggest concern is user changes that could affect system integrity through operational conflicts. "We've had some situations already where someone's had a problem with their system, and we'll give them a new configuration," says Dubisz. "If it isn't done right, that can degrade the whole network." He points out that there is a much greater danger of this occurring if users add software or hardware on their own. Many installation programs modify CONFIG.SYS or other system files. The costs imposed by these conflicts quickly add up: time to debug, involvement of outside support providers, and the loss of the network to other users.

Dubisz currently collects data by popping a diskette into each machine. The data is then transferred into the database in the administrator's workstation. When he upgrades to v3.0 (which has just shipped) he'll be able to do everything over a Novell network. Banyan Vines support is being added. However, users must still manually enter things like printer; monitor; user's name, phone number, and mail stop; node name; token-ring address; or an optional note field.

PC Census is written in dBASE, so its files can be queried by dBASE as well as compatible applications like FoxBase, Paradox, and Concentric Data Systems' R & R Report Writer. Import/export facilities also let you work with software that doesn't directly support dBASE files through comma-delimited files.

Standard reports include the following:

•Configuration report. This report lists each machine, processor, response time, memory, adapters, drives, and port connections.

•Product account report. Reports on specific software or hardware. For example, a report could disclose the types, numbers, and versions of all spreadsheets.

•Inventory change report. This indicates individual items that have changed since the last inventory, including directories or software that has been added. It can be used to control software piracy, or to detect the introduction of potential virus carriers.

•Mapping report. This report lists devices, like network cards, that are address dependent.

A complementary program, the Consolidator, lets you inventory your own site plus licensed PCs from other sites. This application lets you have delegated controls over network segments as well as a consolidated database for centralized control of the entire network.

The PC Census license provides the first year of support (18% of license cost per year thereafter). Support includes unlimited phone support and major upgrades. It also provides updates to both CPU and software fingerprinting: the method that PC Census uses to detect resources. If the program fails to identify a resource, Tally will add it to the database for you. ■

RESOURCES:

NetOctopus: Licensed for 10 nodes, with "unlimited" administrators (100), for $645. Additional sets of 5 users are $275. Site licences are available for 50 nodes and up.
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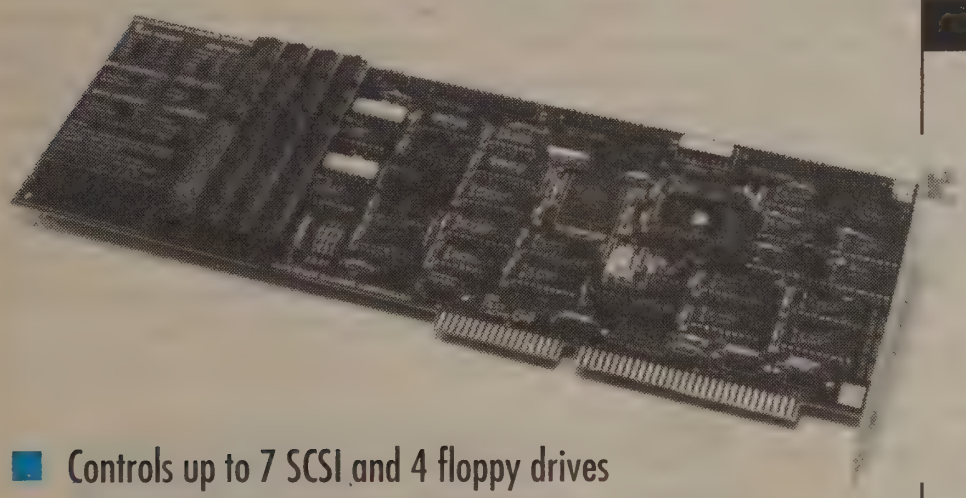

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Electronic Mail

The Medium Is The Malaise

BY BENNETT FALK

For the first time in nearly ten years of using UNIX, I've begun to find electronic mail unappealing.

Ten years is a long time to use any piece of software, and no doubt many people have become disenchanted with email in much less time. It's just that I never expected to be a victim of disenchantment at all, so it's important to understand why email, generally a useful tool, has become so burdensome.

The UNIX "mail" command is the primary vehicle for communications among the people who use UNIX-based computers. It is the heart of the UNIX system, being at once an office automation tool, a laboratory for studying the technical issues of computer networking, and a means of building a human community. The fact that mail, in spite of all its benefits and points of interest, is becoming a nuisance in my daily life is a bad thing.

UNDERSTANDING "MAIL"

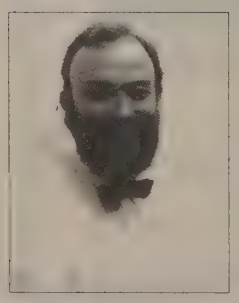
The basic contribution of email is the ability to communicate with other users "asynchronously." One user sends others a piece of mail. Recipients can read and respond at their convenience. The participants don't have to meet face to face.

UNIX

Indeed, as UNIX mail has developed, the participants don't even have to be on the same computer, or the same LAN. All that is needed for UNIX users around the world to exchange mail is a known route through machines that call each other and exchange messages.

The basics of sending and receiving mail are straightforward. To receive mail a user simply types "mail"; if there are messages for that user, they will be displayed. The command "mail username" is used to send mail to the UNIX login "username." After issuing this command, the text of the mail message can be entered directly. The end of the input is usually signaled by typing control-D.

There is much more to using mail than is evident from this short description, but there is no need to master the more advanced features just to exchange mail with other users.



Copyright © 1991 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

THE DELUGE

What has made mail so unappealing lately is a massive backlog of incoming messages. Throughout the workday, messages arrive in my system mailbox, as they have for the last decade. As always, I try to read and respond to them. From past experience I expect to keep anywhere from ten to forty messages in my system mailbox for various reasons. Lately, this backlog has skyrocketed to 140 messages.

With this sort of backlog the mail program becomes cumbersome to use, and this only makes it more difficult to respond to incoming messages. Eventually, people arrive in my office to engage in synchronous, face-to-face communication. Have I received their mail, they ask. Inevitably I respond peevishly: Of course, the mail was received, I just haven't gotten around to doing anything with it. And the social fabric unravels just a bit more.

WHAT'S THE PROBLEM?

Is this just a volume problem? There are, after all, about 1200 people who could send me work-related mail. In a one-day survey of mail traffic, seventy-four new messages arrived in my system mailbox. But those messages were from only fifteen different senders, and that suggests that the problem is not really a volume problem at all.

Looking more closely at this day's worth of new mail, I discovered it was possible to group the new messages into several categories. Sixteen of them were information about a project I'm working on. Thirteen were about social matters (Can we get pastries delivered? If so, what do we want? Has so-and-so's stolen car been recovered? Will there be a party after work?). Twelve were about administrative things. Eleven were general technical questions. Six were notices about the whereabouts of my co-workers. Five were requests for product information, four were requests for pre-sales help. Two were public recognitions of jobs well done. Two requested an opinion, two were about upcoming events. One was about training. Most of these categories are things I have some interest in, and while some of the messages are annoying, it's not clear that anyone is abusing email in sending them.

Finally, I looked at who the messages were addressed to. Of the seventy-four messages only six were addressed to me personally. The rest were addressed to distribution lists that I belong to.

Mailing to a distribution list can be a very useful thing, but it

What remains is the hope that there is some sort of technical solution to this problem, some way to put off email burnout by better screening of incoming mail. Right now, after several readings of the manual, this is still just a hope.

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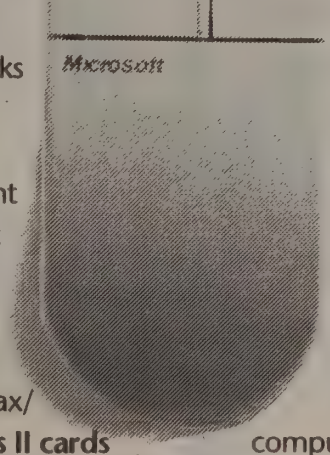

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imposes some degree of anonymity on the communication. The person who sends a question out to a distribution list containing hundreds of names apparently doesn't care who the answer comes from—any answer is better than none. When advisory mail is sent to a distribution list, the sender will probably not know what significance (if any) the message has for its recipients. In any event, the senders may not even know who the recipients are.

As the exchange of information in email becomes less personal, it begins to resemble transactions that might occur in a database. (A lot of the mail in my backlog is actually formatted to look like database records.)

But, however much email can be made to look like database activity, the two are fundamentally different. Email is a medium for distributing information, and is essentially under the control of the sender. Databases are instruments of information retrieval and work at the initiative of the receiver.

The challenge in sending email is part timing (providing information at the right time) and part composition (providing everything the recipient needs to understand the message). Querying a database is relatively free of these constraints: The user queries the database when the information is needed and can usually construct enough context to make sense of whatever is retrieved.

Many of the backlogged messages in my mail box fit this pattern. I can't tell from the text if the message is deletable. It has arrived at a time when I can't tell if it's significant or not. My response is to wait for it to become significant. If it doesn't do that in a week or two, it will be deleted. In the meantime however, it is just another obstacle in my system mailbox.

NO EASY SOLUTIONS

There are several ways to deal with this set of problems. One is to resign from various distribution lists, but this is unfriendly and ultimately an admission that email just doesn't work.

Another is to educate the senders of email about what is appropriate to the medium and what is not. As a proponent of the doctrine of Original Sin, I don't hold much hope for this alternative, and after all, email is still easier to use than most database management software.

What remains is the hope that there is some sort of technical solution to this problem, some way to put off email burnout by better screening of incoming mail. Right now, after several readings of the manual, this is still just a hope. Many of the commands that can be invoked while reading mail can be applied to a message list, and this is useful for processing groups of messages. The Berkeley UNIX version of mail supports saving messages grouped by sender or by the occurrence of some pattern in the subject line of the message. (I just saved all the Shipping Release Forms [SRFs] in a folder of their own and got rid of twelve of my 140 messages.)

What would be really neat is the ability to group messages by addressee, so each distribution list could have a folder of its own where messages to that list could age while I figured out what to do with them. It doesn't look like this feature exists, but I'm still looking. If you find it before I do, you could always send mail to *rosebody@well.sf.ca.us.* ■

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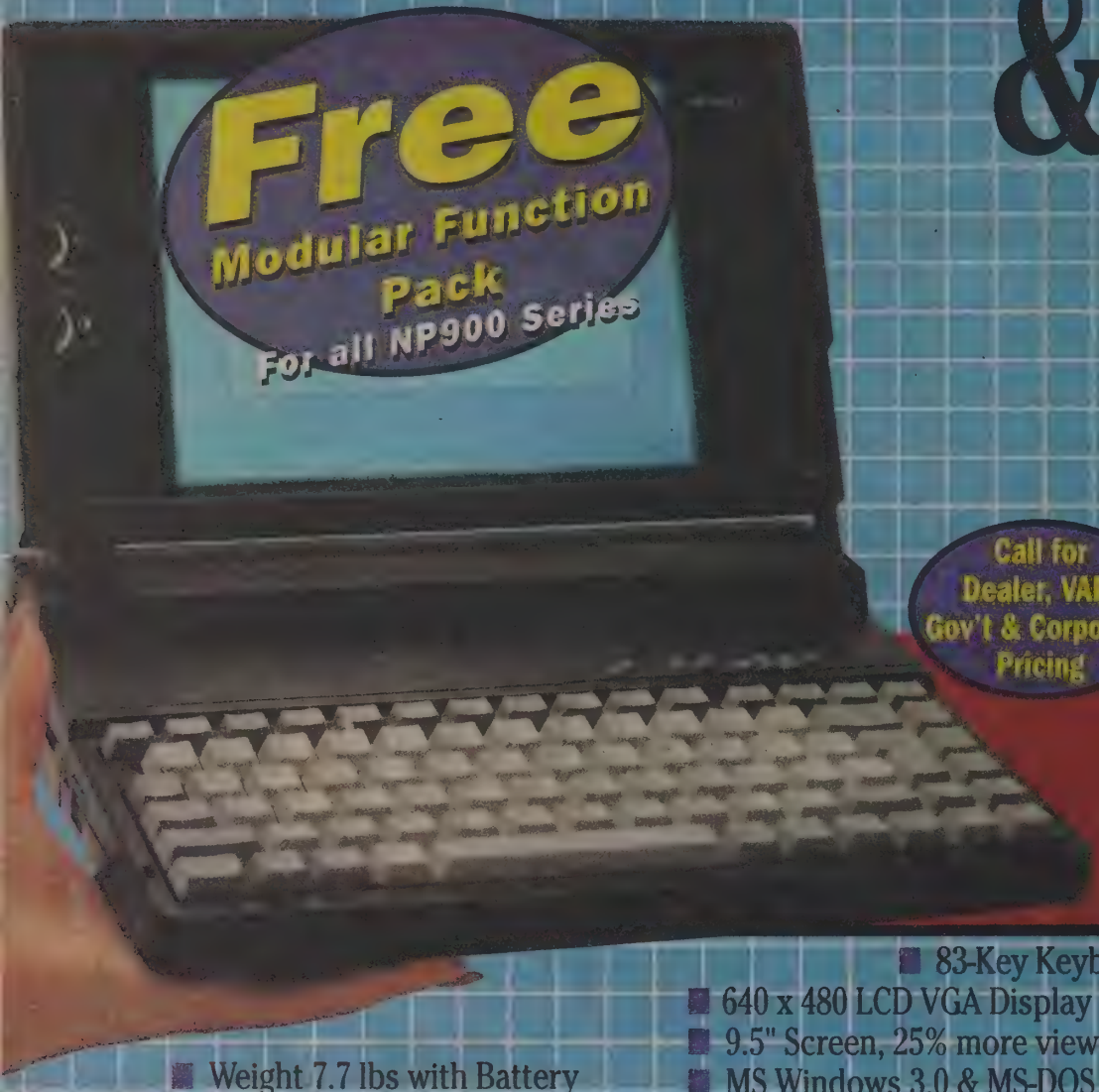

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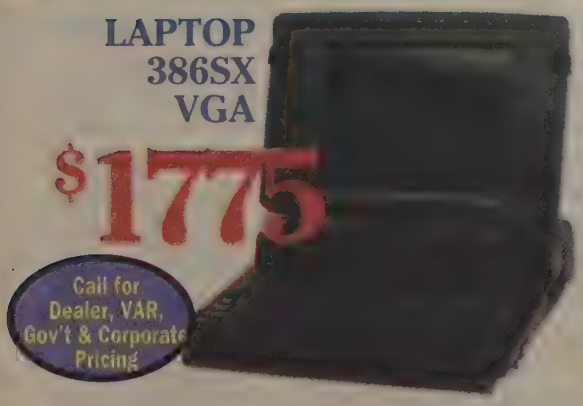

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Microsoft Money For Windows Provides The Tools To Track Where Your Money Is Going

BY WOODY LISWOOD

If you have been waiting for a checkbook program with the ease-of-use of Quicken and the functionality of Windows, wait no longer. Money is an excellent checkbook program, with lots of bells and whistles to help you in managing, controlling, and understanding your financial life.

With Quicken being the DOS standard for these types of programs, Money would start out poorly if it did not import Quicken files. It does. Using Quicken's data interchange format, you export your files out of Quicken and load them into Money. I did this and had no problems at all.

Having used Quicken for years, I expected that I would have to learn new habits to run Money. To my surprise, Money was obvious to me from the start.

I quickly found myself enamored with one of Money's features—SmartFill. As you entered your payees and categories, Money remembers what they are. The next time you start to enter them, Money watches your keystrokes and as soon as the entry becomes unique, it completes the typing for you. A great idea. Money also places the last amount you paid for that payee in the check column. Although you can easily type over it, I found it a bit disconcerting for home finances. With only a few regular exceptions, like our house payment and insurance payments, our checks vary each time. All in all, I really like the feature, but I do have to pay attention and not let Money outsmart me.

Money allows the management of traditional accounts such as checking accounts. It also handles other types of bank accounts as well as savings, money-market, credit card, cash, asset, and liability accounts.

In case you need some help getting started, Money includes a variety of categories already set up, depending on whether you use Money to monitor your personal or business accounts, or you combine them.

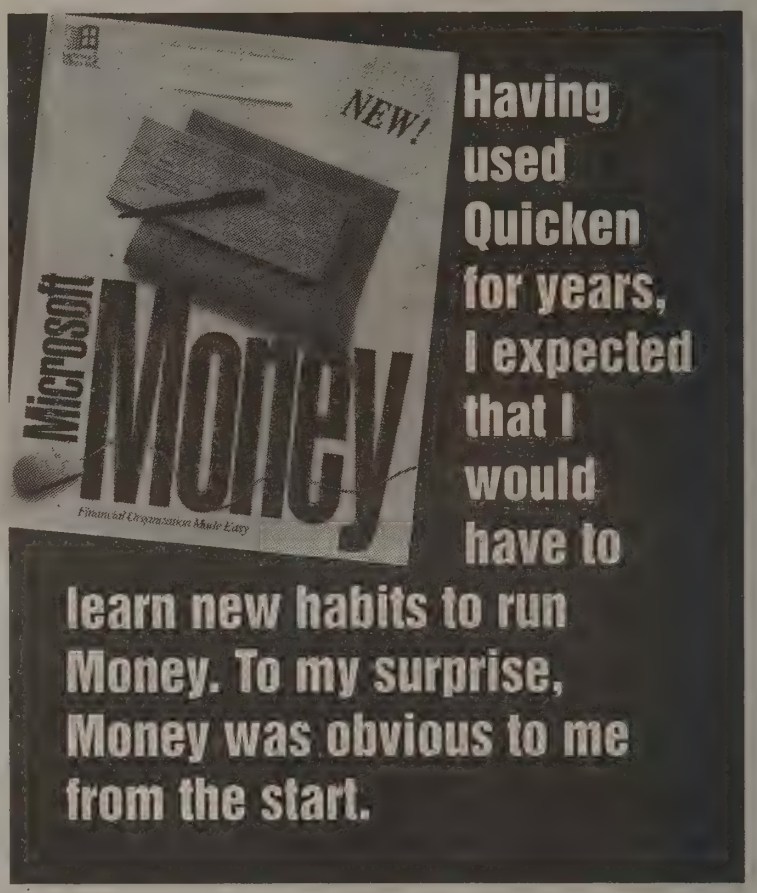
Data entry is flexible. You can enter data using a check register type of view or you can have Money display a check on the screen and you just fill in the blanks. Both work.

Since checkbook programs have been around for a long time, I will not take up space by mentioning every thing you can do. You can do what needs to get done: split transactions, combine transactions, print checks, schedule payments, and reconcile down to the penny.

Reconciliation even has some help, not suprisingly called SmartReconcile. If, after you've done everything and are still off, Money will use some smarts of its own to help find the error. It will help you look for things such as misplaced decimals or transposed digits. If, after all that, you still don't balance, Money will automatically adjust the account balance for you.

Reporting is also up to par. There are a variety of preplanned reports as well as the ability to modify and create custom reports.

And, after you finish, as you exit, Money asks if you want to back up the data files to a floppy drive. You do do backups, don't you?


NEW!
Microsoft
Money
Financial Organization Made Easy
Having used Quicken for years, I expected that I would have to learn new habits to run Money. To my surprise, Money was obvious to me from the start.

There is also a full set of editing features you can customize by adding or deleting categories. You can also look at your payee list and edit it as well. You can even add a new payee name before you write your first check to them so that all the data will be there when you start to do your entry.

Managing special accounts will take some thought, but will be easy if you are willing to put in the time and energy to keep things running smoothly. The documentation has clear instructions for everything from cash accounts to investments, and even your home mortgage. Why, you might ask, would you want to track the details of your home mortgage in Money? Well, so you can have a current net worth calculated for you upon demand. Remember, with each payment, your loan is paid off by a few bucks, and your net worth is increased by those same few dollars.

While money will not replace a traditional full-featured accounting or bookkeeping program for businesses demanding a double-entry system, Money can go a long, long way in organizing your home finances and many small businesses.

The Windows interface makes working with Money a snap. The documentation explains how to do the odd things, like accounts payable and receivable. Another valuable addition to the Microsoft solution series. Well done, folks! ■

RESOURCES:

Money, $69.95
Microsoft Corp.
One Microsoft Way
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98052-6399
(206)882-8080

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MAN OF THE YEAR:

Philippe Kahn

President, CEO, and Chairman, Borland International

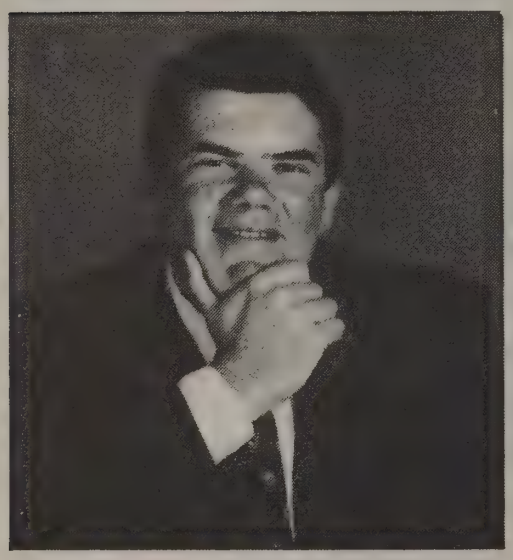
A Little Barbarism Is Good For The Industry

BY MARY EISENHART

"They say we're the barbarians of software," says Philippe Kahn.

He's talking to a roomful of analysts, venture capitalists, and other industry types, gathered at the Personal Computer Outlook conference in December to hear what he's got to say about the future of Borland, now that it's acquired and absorbed Ashton-Tate. He talks about the lean, mean Borland organization, its obsession with technical excellence, the ongoing interest in finding something the competition's not working on and building on it. How he's spent the few months since the acquisition became final consolidating the two companies.

But he admits that sometimes the computer industry sees him and his company as barbarians, and that this sometimes gets in the way of their being taken seriously.



"But," he says, "the barbarians were pretty good people. They just had a lousy PR organization." Consider, he reminds the audience, that about the time the barbarians showed up at the gates of Rome, the Romans were busily throwing Christians to the lions, having orgies, murdering their political enemies, and generally being pretty disagreeable folks. And along come some nice family-oriented, living-by-the-warrior-code Visigoths and their pals, and guess who gets called barbarians...

It gets a laugh, as it's meant to. But it also makes a point.

Much of the computer industry seems to spend a disproportionate amount of its resources in long-running and morale-destroying lawsuits. Customer support is more and more often a casualty of declining profit margins. New releases of software often ship in a buggy state, late, or not at all.

And on the other hand, there's Borland, now one of the largest software companies in the world and an increasingly formidable rival to Lotus and Microsoft. Not, perhaps, your most buttoned-down company, but one that seems to have all the right secret weapons in the battle for world domination. Excellent, well-targeted products. Happy employees determined to make them even better. Happy customers who rated Borland #1 in customer satisfaction on a recent J.D. Power survey. And a president whose pride and integrity are on the line with every product.

We think Kahn's doing it right, and we're delighted to name him Man of the Year for 1991. And in honor of the occasion, we asked him a few questions by way of updating his comments on the Ashton-Tate acquisition (see cover story, issue #86, for that interview).

Now that the acquisition of Ashton-Tate's been completed, what benefits has Borland realized?

There are two reasons why Borland bought Ashton-Tate.

First, we wanted to strengthen our International infrastructure immediately. That's a huge benefit to us in the mid- and long term. And secondly, we were very interested in a technology that had been developed by a company that Ashton Tate had just acquired: InterBase. Two very compelling reasons.

Part of the post-acquisition process has been the establishment of dBASE as an open standard. What, precisely, is meant by the term in this case?

As we always said, this means that we are very pleased to let third-party companies build products that make use of the dBASE command set. However, of course, dBASE is a registered trademark and dBASE is a copyrighted product. As you know, Borland has a strong stance for innovation. Unlike Lotus, we don't believe in litigation as a way to gain a business advantage. We're technology driven.

What bearing does that have on the Quattro/Lotus issue?

We are holding a position on principle in the Lotus case. Lotus basically is attempting to restrict the user's choices. We are making a strong stance, not only because it's the best thing for the PC community but also because all of us agree that that's what protection of intellectual property is for: to promote innovation.

We're delighted that the Department of Justice has made its views known in favor of technological innovation. As you know, the Department of Justice has filed on behalf of the US Copyright Office a "friend of the court" brief in Lotus vs. Borland. The brief states that menu items are not copyrightable, cites the same cases we've been citing to the court, and provides the court with copies of long-established internal policies of the Copyright Office to further support the point.

This is a bit technical, but the bottom line is that we hope that Lotus soon comes to the realization that it's technology and innovation that have to drive our industry forward.

Since Macintosh has never been a particularly comfortable fit at Borland, where do the Mac products, including dBASE Mac, fit in your current plans? Also, what's happening with Framework?

We have been talking to Apple about potential plans for future Mac products, but no plans have been announced. We will continue to ship and support Framework and dBASE Mac. There will be an upgrade path for Framework customers—we are working on a Windows integrated application which we believe will be attractive to Framework users.

What is Borland's strategy with regard to UNIX-based and other large-computer database systems?

We're always investigating new operating systems, but have no plans to announce now. Of course, Interbase and dBASE are on the UNIX platform now. Paradox and SQL Link give customers access to the most popular data servers.

Given Borland's exemplary record for keeping its customers happy, do you anticipate any problems supporting all the new products and customers you've acquired as a result of the merger?

My job is precisely to anticipate problems. So I have.

Basically our goal is to release a nice upgrade to dBASE IV, namely 1.2, which greatly improves performance, adds mouse support, etc., right away. That will help customers.

But the real goodies come with the Paradox for Windows and dBASE for Windows that you'll see in the first part of 1992. They are both brand new code bases, all based on Borland object-oriented technology. Now users won't have to choose between Paradox and dBASE: They are both fully inter-operable! ■

IQ ENGINEERING: FONT TECHNOLOGY LEADERS.

IQ Engineering was the first company to design and manufacture a multi-font cartridge for HP printers. From their first font cartridge--the Super Cartridge 1--to their latest product offerings, the Silicon Valley firm continues to lead the market in HP printer enhancements. Super Cartridges are now available for every HP LaserJet printer model and for the DeskJet Plus & 500.

IQ Engineering's Super Cartridge products combine quality, performance, and broad font selection. IQE's engineers "hand-tune" each font in order to produce the highest quality characters possible.

"The final test of a font product must be based on the quality of the printed output," said IQE president Michael Gardner. "This is our first goal at IQ Engineering."

This commitment to font quality has earned IQ Engineering accolades from numerous industry critics. Super Cartridge fonts have been awarded two "Best of" awards and a prestigious "Editor's Choice" from PC Magazine.

IQ Engineering's technical innovation continues. They are now marketing a new scalable font cartridge for HP LaserJet III printers. This new cartridge, the Super Cartridge 3/Professional Edition, offers LaserJet III users who are looking for PostScript, a better alternative than a cumbersome emulation cartridge.

The Super Cartridge 3 provides equivalents for the 35 typefaces made popular by PostScript printers--such as Palatino, Avant Garde and Dingbats--plus 15 other type styles. These IQ Engineering typefaces include a version of Garamond Old Style, decorative faces like the medieval English Blackletter and Modern Gothic (similar to Diet Pepsi's logo) and several fixed-width fonts for spreadsheets. And keeping with tradition, IQE's font design is excellent.

If you're looking for PostScript--look first at the Super Cartridge 3...it's a better option for the LaserJet III.

With the Super Cartridge 3 users can access over 40 symbol sets, more than any other scalable font cartridge, for foreign language, math and scientific uses.

Unlike PostScript cartridges for the LaserJet III, Super Cartridge 3 typefaces use HP's own PCL-5, so no conversion from PostScript to PCL language is needed when printing. This means that documents containing IQE's PostScript look-alike typefaces print up to 2.5 times faster than equivalent PostScript faces do on either LaserJet III with an emulator, or on a PostScript printer. This speed factor can be critical for printers on a network or printer sharing device where soft font downloading is unreliable and PostScript lengthens the wait in the print queue.

The Super Cartridge 3 uses the printer's own font-scaling and resolution enhancement feature for fast, 300 dpi printing. It also works well with the LaserJet III's original hardware configuration and can function with all of its resident fonts. Since no language conversion is necessary, the Super Cartridge 3 doesn't require any extra printer RAM or an expensive accelerator board to print.

IQ Engineering supplies HP-standard autofont files that let users install the Super Cartridge 3 automatically in WordPerfect, WordStar, Windows, Microsoft Word and others. Font drivers are provided for Lotus 1-2-3 and Ventura Publisher. Free screen fonts are available for Windows and Ventura.

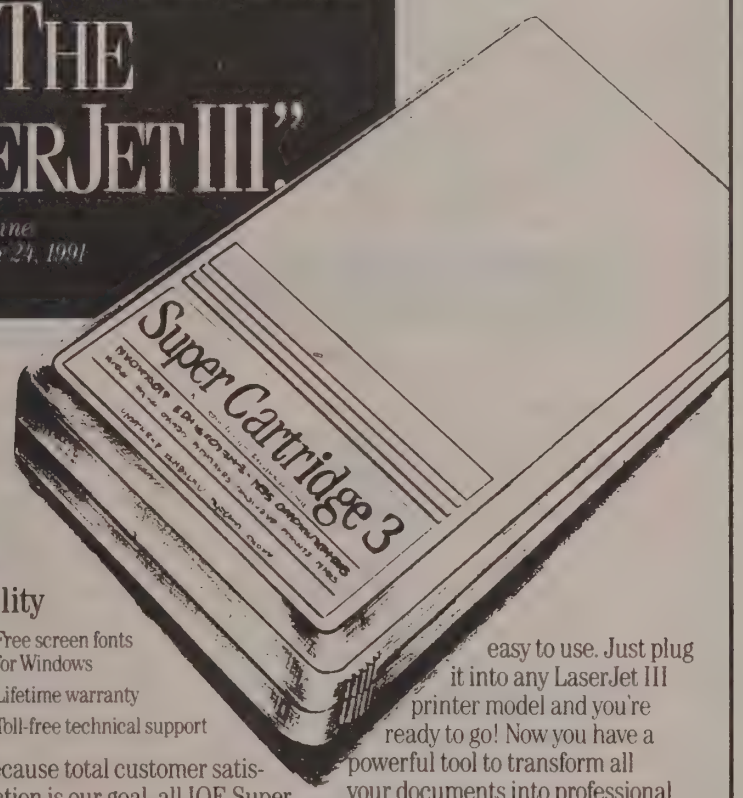
The Super Cartridge 3, like all IQ Engineering products, comes with a 30-day money back guarantee, a lifetime warranty, and toll-free technical support.

If you're looking for PostScript--look first at the Super Cartridge 3 from IQ Engineering. It's a better option for the LaserJet III. ■

IQ Engineering:
685 N. Pastoria Avenue; Sunnyvale, CA 94086
800/765-3668 or 408/733-1161; Fax: 408/733-2585.

"THE BEST SCALABLE CARTRIDGE FOR THE HP LASERJET III."

PC Magazine
September 24, 1991



Super Cartridge 3: PostScript Variety, LaserJet III Compatibility

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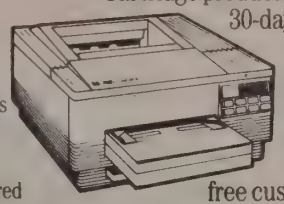

Because total customer satisfaction is our goal, all IQE Super Cartridge products come with a 30-day money-back guarantee...so you'll be certain it's right for you! And only IQE includes toll-free customer support and a lifetime warranty.

Best of all, the Super Cartridge 3/*Professional Edition* is easy to use. Just plug it into any LaserJet III printer model and you're ready to go! Now you have a powerful tool to transform all your documents into professional statements.

Call now for your Super Cartridge 3 discount and find out why PC Magazine says it's "...the only [font cartridge] you'll ever need for the LaserJet III."
PC Magazine, 2/12/91

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MICROKNOWLEDGE INC.

THE 5th ANNUAL MICROTIMES

Our Yearly List Of Industry Leaders

"It's hard not to notice that the worldwide computer industry is in transition. Competitors are acquiring other competitors, restructuring, reporting losses, and laying off employees. Computer companies throughout the world have announced major changes in strategy or have formed new alliances."

—Scott McNealy, Sun Microsystems Annual Report

Not unlike 1990, 1991 was a turbulent year for the computer industry as the economy soured, markets changed, and long-time alliances fell apart.

Many of the individuals on this year's MicroTimes 100 list got there by either bucking these trends or by setting a few of their own. You'll find some recurring themes here: strategic alliances, the increasing importance of the consumer market for computers, the ability of new and old companies to adjust to rapidly changing operating conditions.

It was a year in which some established companies—notably Ashton-Tate—simply ceased to exist. It was also a year of innovations and startups in areas from multimedia to pen-based computing. Here's a look at some of the people who made it all happen.

—MicroTimes editors

Sheldon Adelson

Chairman and CEO

The Interface Group; Las Vegas Sands, Inc.

The entrepreneurial Adelson bought a magazine called *Data Communications User* in 1971, which got him to thinking about the similarities between trade press and trade shows. Several smaller shows led to the creation, in 1979, of COMDEX, which became the fastest-growing trade show in the United States. COMDEX has led not only to a host of other shows (1991 saw the launch of Windows World, and PC/North America debuts in 1992), but also to the acquisition of the Sands Hotel and five L-1011 jets, the better to accommodate the needs of hordes of trade show-goers.

John Akers

Chairman

IBM

It's been the less-than-enviable lot of Akers to run IBM at a time of rapid and chaotic change in the industry, a period in which the business truths that had made Big Blue the successful monolith it's been for decades have suddenly turned out to be wrong. (For one startling example, IBM entered into an unprecedented alliance with Apple to develop future operating systems and multimedia products.) In the course of the year, Akers has made headlines with his public discussions of the organization's complacency and its adverse effect on IBM's competitiveness; he's also castigated the US government's short-sighted policy in imposing high tariffs on active-matrix LCD screens, a policy which will result in IBM following other vendors who have already moved their portable computer manufacturing facilities offshore, with attendant loss of jobs in the US. Most recently, he's presiding over the most drastic reorganization in IBM's history (see Industry Insight, this issue), a measure intended to create a host of smaller, more autonomous, and more competitive Baby Blue companies.

Alan Ashton

President

Bruce Bastian

Chairman

Pete Peterson

Executive Vice President

WordPerfect

Ashton and his former student Bastian founded WordPerfect in 1977; Peterson came along a few years later. The three men currently share most of the company's ownership and guidance: Bastian develops its growing international markets, Ashton oversees its product development, and Peterson conducts most of its day-to-day business operations.

In the last year, they've substantially strengthened their flagship word processor's position as a multiplatform standard, shipping a new improved version for Macintosh, another for the Poqet PC, the visually spectacular NeXT version, and the long-awaited WordPerfect for Windows. They're currently at work on adding Russian- and Japanese-language WordPerfects to their repertoire of international versions.

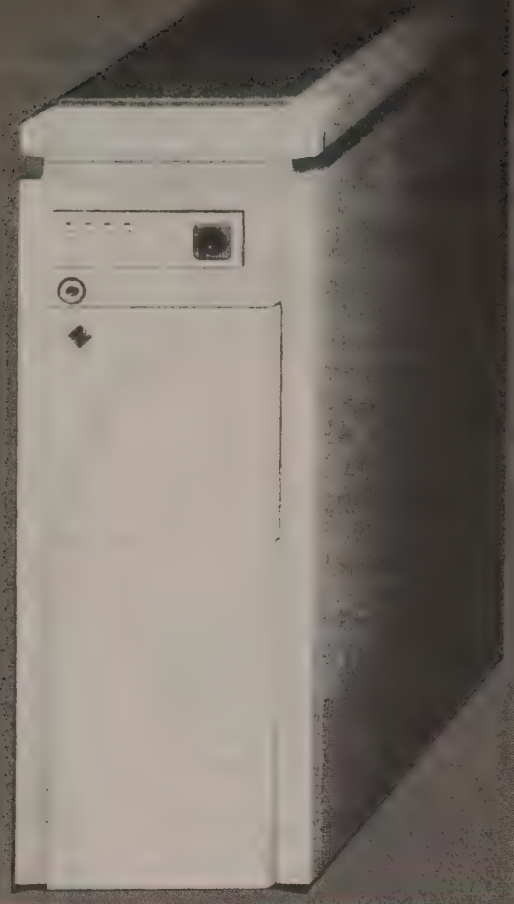
But the area where WordPerfect sets itself apart from the rest of the industry is in its famous customer support, where almost a third of its personnel are employed. As tightening budgets are causing most companies to devote fewer resources to support and make it more expensive for the customer, WordPerfect not only continues to offer toll-free help to all its US and Canadian customers, it recently implemented a program of having disk jockeys play music and talk to the callers while they're on hold.

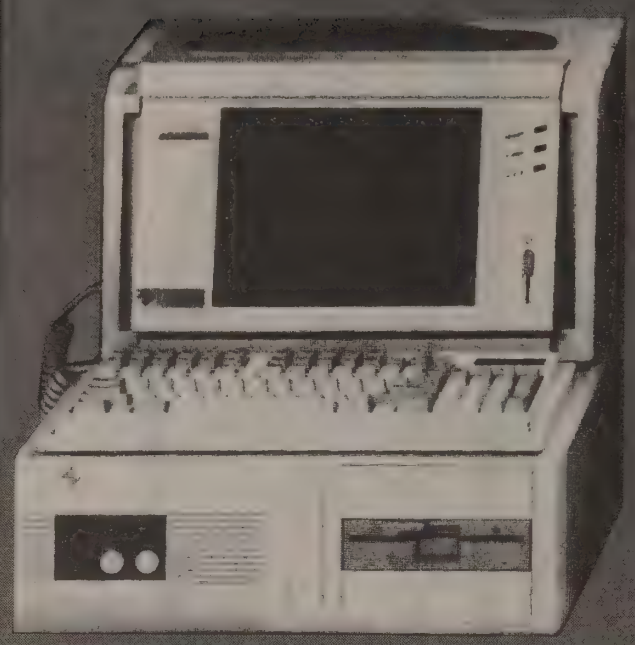
John Barber

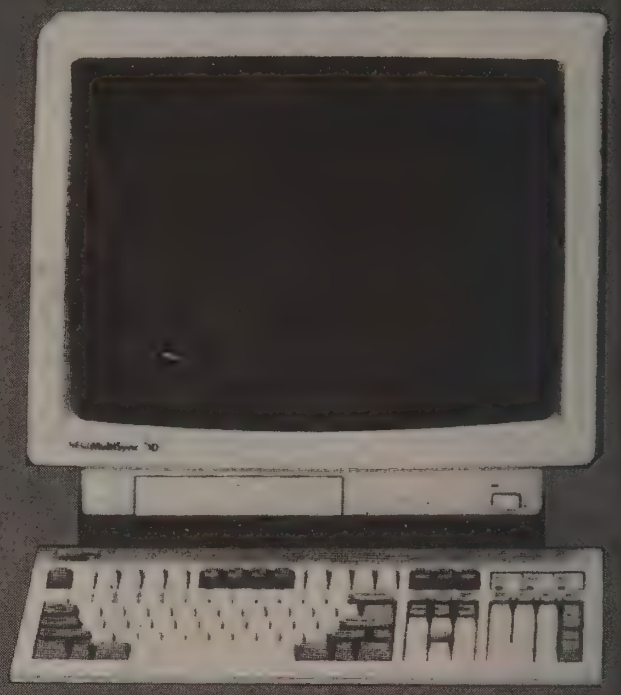
General Manager

GEnie

"Top 5 National







	486-33 MHz	486-25 MHz	386-33 MHz
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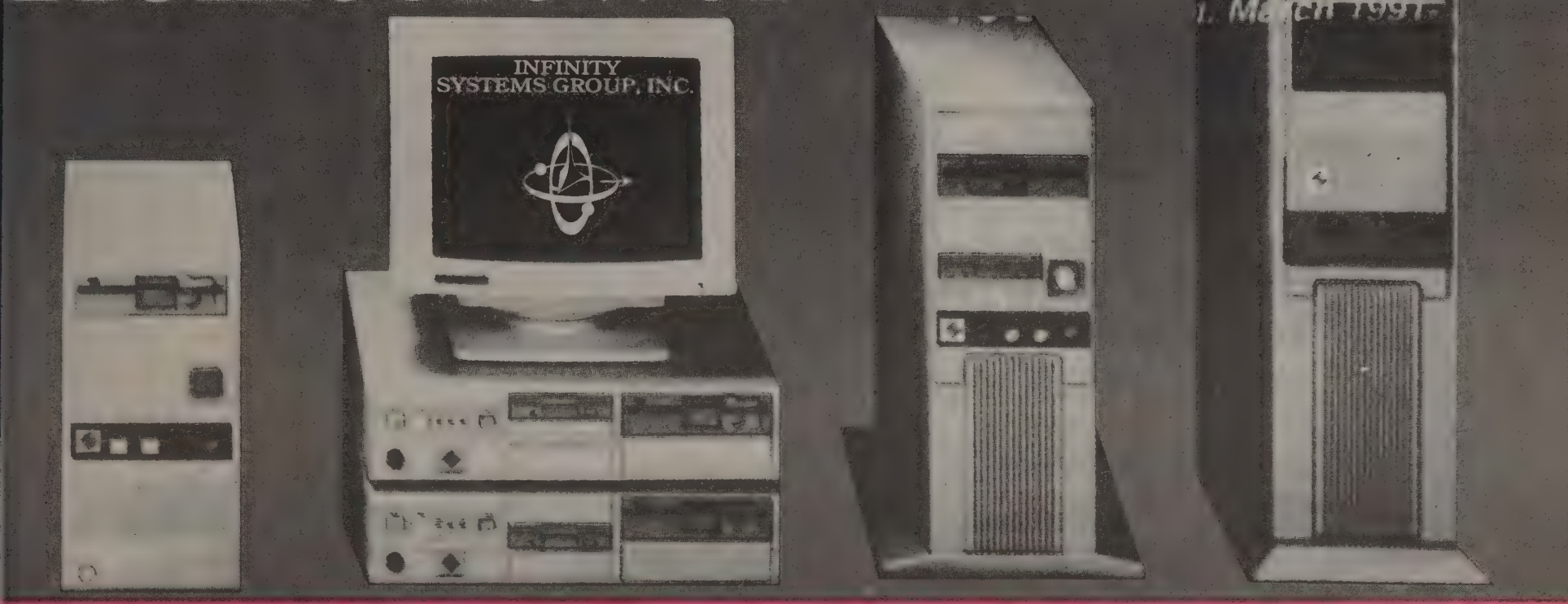

386-25 MHz

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ESDI ADAPTECH HD+FD CONTROLLER 15 MB TRANSFER	$145
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Barber engaged in some aggressive marketing during the year—including substantial rate cutting—and was able to reap the rewards of Prodigy's ongoing (and much-publicized) hassles by offering more liberal conference and email policies at low rates. Along the way, GEnie's evolved into a lively discussion forum with a national reputation—over the last year, we've heard particular recommendations for the Japan and Law Enforcement "Roundtables" as quality resources for debate and information.

Eric A. Benhamou

President and CEO
3Com

Along with Chairman L. William Krause (see separate listing) Benhamou took charge of 3Com's transition from a client-server networking company to one focused on the issues of global computing, from scalable systems and multivendor environments to product localization. Part of the process was streamlining operations and eliminating projects that didn't fit this strategy—e.g. turning the LAN Manager project back to Microsoft—while another part involved forming and strengthening alliances or joint ventures with companies around the world. As fast, efficient global data communication becomes a business requirement, 3Com expects to capitalize on the growing market by being there first with all the right solutions.

Daniel Ben-Horin

Director
CompuMentor

In the hard times the recession brings, nonprofit organizations often fill the gaps left by budget cuts in social services and other needed-but-costly areas. Nonprofits often want to use computers to do their work more efficiently but can't afford the expertise to get them operating and keep them running.

Enter CompuMentor, which Ben-Horin founded in San Francisco several years ago and which has grown from an intrepid corps of dial-a-nerds to an effective organization that matches increasing numbers of volunteer mentors with nonprofits in need every year. It's served as an inspiration for the creation of similar organizations nationwide, and allowed hundreds of people with computer skills to put them to use where they're most critically needed by those least able to afford them.

Leo Berenguel

President and CEO
PLI

Berenguel cofounded Peripheral Land in 1985 to build SCSI disk drives for Macintosh and OEM accounts, and achieved early success. But while the disk-drive market has been a catastrophe for other vendors, Berenguel, with no outside financing, has grown PLI to a global leader and innovator in the mass storage market—and a spot in the *Inc.* 500 list of fastest-growing private companies for the past two years. The company's diverse range of storage products for Mac and PC has recently been augmented with a series of drive options for NeXT computers, from an external floppy drive to removables and CD-ROMs.

Stephen M. Berkley

Chairman and CEO
Quantum

At a time when US disk-drive vendors are commonly posting losses and moving operations offshore, Quantum opened a new state-of-the-art manufacturing facility in Milpitas, expanded its product line, and nearly doubled its previous year's earnings. Hardware vendors from Acer to Zenith (and also including Apple, Sun, and Hewlett-Packard), drawn by Quantum's record of innovation and reliability, snapped up the company's fast, dependable 2.5" and 3.5" drives for use in portable and desktop machines. With the advent of the speedy and high-capacity Go•Drives, Quantum's poised to do well in the expanding market for power-efficient portable computers.

BMUG

Cast of Thousands

Still and always in the business of giving away information, BMUG offers such good support and help to its users that it's one of two user groups in the country (the other being the Boston Computer Society) Apple recommends to its users. Executive Director and all-around techno-wizard Steve Costa, along with a host of staff and volunteers, offers technical assistance to members, a forum for vendors (at least the ones brave enough to face the notorious BMUG peanut gallery) to exhibit their wares to one of the most sophisticated and finicky groups of users in the industry, a massive software library on disk and CD-ROMs—and a world-famous array of T-shirts. And while it's the resource of choice for Mac users, there's lots more. Windows. UNIX. Programming Languages. Constitutional Rights. Through it all runs the BMUG attitude of ferocious integrity, irreverence, candor—and quite a bit of residual fervor and zeal.

Michael D. Boich

Chairman

Barry James Folsom

President, CEO, Acting VP Marketing
Radius

As the color graphics and multimedia markets grew in 1991, so did Radius, which reported record earnings for the fiscal year, further entrenched itself in the Mac marketplace, and rode the Windows wave into the PC market. Reflecting the migration to superstores in the dealer channel, Radius signed agreements with CompUSA and Computer City, and, getting an inside track on color publishing, entered into a strategic alliance with Eastman Kodak.

Mary Boone

Partner
NDMA and Associates

Boone, a management consultant, discovered that in the world of corporate computing, the proliferation of machines on the desktop did not necessarily translate to senior management using the tools. A spreadsheet here, a chart there, but very little taking advantage of the powerful capabilities for running a business—often because executives perceived computers as little more than dedicated word-processing boxes for the secretarial pool.

So in the finest tradition of computer evangelism, Boone decided to do something about it. The result is *Leadership and the Computer*, a book of case histories in which CEO-level managers, in businesses ranging from international law offices to magazines to telecommunications to Mrs. Fields' Cookies, offer first-person insight into the tools and techniques that help them keep their organizations competitive. It offers a wealth of information particularly useful to those who know they should be using computers more effectively in their organizations, but don't necessarily know where to begin.

Paul Brainerd

President and CEO
Aldus

The turbulence of the industry left Aldus largely unaffected—earnings were good, and the new versions of PageMaker and Persuasion for Windows enabled the company to capitalize on the explosive growth of the Windows environment. Brainerd, often considered the father of desktop publishing, has broadened his company's scope from the flagship product, PageMaker, to include a full suite of applications for micro-based publishers, from high-end corporate users needing database connectivity to the myriad of entry-level users just discovering the mysteries of page layout.

Frank Buckley

Vice President and General Manager
Disk Products Division, Toshiba America

While US drive vendors have tended to move their manufacturing operations offshore, causing massive layoffs, Toshiba decided to build a new plant in San Jose. The 1GB drives made there were designed at Toshiba's plant in Irvine, but Buckley cited an abundance of skilled disk-drive engineers and proximity to component suppliers as the key factors in the decision to locate the operation in Silicon Valley. When fully ramped up in a few years, the plant is expected to employ four hundred people and build five hundred thousand drives a year.

David Bunnell

Publisher and CEO
New Media

Publishing veteran (and founder of some of the most-read magazines in the industry, including *PC World* and *Macworld*) Bunnell returns after an absence of several years with a new monthly covering developments in the world of multimedia. To people trying to make sense of the emerging (and conflicting) standards and figure out what's practical and what's pie-in-the-sky, *New Media*, with contributors from artists to futurists, will provide valuable tips and analysis.

Nolan Bushnell

Entrepreneur

The man who brought the world such phenomena as Atari and Chuck E. Cheese tends to get involved with several new ventures every year. During 1991 he served as spokesman for Commodore's CDTV project and is currently involved with a printer-sharing startup called Octus. In general, Bushnell's one of the people who keep the industry lively. His debates with Electronic Arts chairman Trip Hawkins as to the future of consumer electronics in general and multimedia in particular were among the bright spots on the year's conference circuit; it might be a good thing if they'd take the show on the road.

James A. Cannavino

IBM Vice President and General Manager, Personal Systems
IBM

Cannavino heads the division of IBM most closely involved with Apple in its multifaceted codevelopment efforts, one aspect of which is the creation of an object-oriented environment for developers of future system software. Echoing one of the year's recurring themes, he said at the time of the announcement, "Building a true object-oriented software environment will unleash significant productivity gains for users and developers. We are drawing on the best of IBM and Apple to produce a fundamentally new and better method of software construction, one that builds programs with prefabricated blocks instead of line by line. No other technology has the potential to break the applicatons logjam that so frustrates customers today."

Doug Carlston

President and CEO
Brøderbund

1991 saw the initial—and lucrative—stock offering for this award-winning software company, which Carlston has taken to a position of leadership for innovation and quality. Along the way, Brøderbund kept the great software coming, perhaps most notably the inter-generational hit Kid Pix. Another milestone—the elusive Carmen Sandiego, the wily criminal whose bestselling adventures arose from Carlston's childhood fondness for almanac reading—became the first computer-game character to get her own TV show.

THE 5th ANNUAL MICROTIMES

100

Denise Caruso

Editor
Seybold Digital Media

A chaotic convergence of entertainment, consumer electronics, and computing, multimedia is currently at least as much hype and unfulfilled promise as useful product. In her newsletter, Caruso sifts through a bewildering assortment of claims, counterclaims, warring standards, vaporware announcements, and other trappings of an emerging industry, and does a great job of presenting lucid information to readers attempting to make sense of it all for their own strategic planning.

Steve Case

President and CEO
America Online

From the remains of Control Video, a game-downloading service that failed some years back, Case created the company that was, until recently, known as Quantum Computer Services. Now the company's been renamed after its flagship offering, which has grown in the last year to become the nation's third-largest online service (after CompuServe and Prodigy), and the only one that's independently owned.

Case has shown himself to be a conferencing-savvy and clearheaded pioneer. Not only has he attracted an impressive array of investors, from Kleiner Perkins to Citibank, he's offered users (particularly new ones) the best online interface in the business and continually added to the range of services available—in addition to a wide range of discussion areas on various subjects, AO offers direct access to many leading hardware and software vendors in the industry, news and information, and a great software library.

Attracted by AO's low, no-gotchas pricing, free software, and easy-to-use interface, SeniorNet has recently made the system its national home, and a joint venture to create an online version of the *Chicago Tribune* is in the works.

In a year notable for frequent pushing of the Censorship, Privacy, and Computer Crime hot-buttons, Case responded to AO's recent kiddie-porn-in-email flap with a message to his subscribers that's likely to be anthologized as one of the seminal documents in the civilization of cyberspace. The letter alone is a notable achievement for its clearheaded rationality in a situation where hysteria and witch-hunts have become more common; taken in context with the rest of AO's progress in the last year, it's one more indicator of why more and more users are flocking to the system.

Barbara Cass

Executive Director
Software Entrepreneurs Forum

As SEF has grown from small beginnings to an international organization with hundreds of members, Cass has kept it all running smoothly and fostered its evolution. Under her able administration, SEF has become more than a professional association for software developers seeking success in a competitive industry, it's also one of the best networking and resource-gathering places available.

Edwin Catmull

President
Pixar

"We want to help computers make the most gorgeous pictures they possibly can," Catmull remarked last summer—and made some significant strides in that direction. In a major coup indicating the arrival of computer-based animation in the most traditional of places, Pixar's software is now in use at Walt Disney Pictures, replacing arduous frame-by-frame hand coloring. The technology was a success in *The Rescuers Down Under*, and Disney has now agreed to finance and distribute Pixar's first full-length computer-animated film—great news for fans of *Tin Toy* and *Luxo Jr.* and *Red's Dream* and *Knicknack*...

Chan-Young Chew

Founder, CEO, and Chairman
Kris Technologies

A veteran entrepreneur with a track record for founding highly successful international companies, Chew founded Kris (a US-based corporation with most of its investment coming from Singapore) in 1990 to address the information-sharing needs of businesses. In less than a year of selling product, he's built Kris to one of the most ubiquitous product lines on dealer shelves, offering hardware and software solutions from personal fax to sophisticated networks to high-end 486 and RISC machines.

Jim Clark

Chairman

Ed McCracken

President and CEO
Silicon Graphics

While continuing to improve the awesome capabilities of SGI's high-end systems, long the choice of such demanding customers as NASA, Clark and McCracken have pursued a determined campaign to make the power of their real-time 3-D graphics workstations accessible to larger markets. As part of the effort to establish an industry-standard platform, they're key members of the ACE consortium; toward the same purpose, they recently opened SGI's formerly proprietary graphics library as an open standard accessible to developers at a low licensing fee.

But SGI's big splash in 1991 was clearly made by its low-cost workstation, the Iris Indigo, which is taking the multimedia world by storm and about which we'll be hearing a lot more.

Lisa Cohn

Founder, Director
Special Technology Center

Inspired by the plight of her own son, who has cerebral palsy, Cohn founded the Special Technology Center in Mountain View to make computer-based tools available to disabled children and adults. It refurbishes donated computer equipment and lends it to low-income families; helps train teachers, evaluates enabling tools, and, most of all, helps people transcend their disabilities and work, play, create, and communicate.

Scott D. Cook

Chairman, President, CEO
Intuit

Cook founded Intuit to automate those financial tasks common to home users and small businesses, and has built it into a thriving company that draws a whopping 47% of its customers from word-of-mouth recommendations by other customers. Part of this success is Quicken, the first checkbook software users swore by instead of at. But in addition, the company offers accounting and reconciliation software, connectivity with tax packages, and a full range of business forms and supplies. The still-private company is not only one of the chief drivers and beneficiaries of the home computing boom, it's making significant strides in making its products work better in conjunction with government and corporate mainframes.

Jan Davidson

President
Davidson & Associates

A longtime school teacher herself, Jan Davidson founded Davidson & Associates to improve the quality of educational software, and it's been one highly acclaimed package after another for the Torrance-based software house. Her software, which includes the ever-popular Math Blaster series and the multimedia ESL package English Express, implements an integrated approach to learning and is right on target for the needs of young and adult students, as well as their teachers and parents.

Michael S. Dell

Chairman and CEO
Dell Computer

In seven years, Dell has taken his company from a direct-mail clone shop in his dorm room to a $229 million international hardware giant. While technical excellence and customer loyalty are significant factors in this success, Dell has also shown a remarkable ability to adapt to changing market conditions, taking advantage of Ireland's tax benefits by building a manufacturing plant in Limerick and diversifying his distribution to include retail giant CompUSA and business superstore Staples. Dell's company's ability to innovate, keep costs down, and support its customers have kept it growing as many of its established competitors flounder.

Brian Dougherty

Chairman and CEO
GeoWorks

From its somewhat unlikely origins producing windowing environments for the Commodore 64, Dougherty has transformed GeoWorks into a formidable contender in the PC GUI market with GeoWorks Ensemble, a low-cost integrated package that brings multitasking and ease of use to machines that couldn't begin to run Windows. And, undaunted by the challenge of essentially marketing a new operating system in a Microsoft-dominated world, he's attracted developers (most recently Borland with a version of Quattro, providing the environment a first-class and much-needed spreadsheet) and engaged in so many bundling arrangements, particularly with portable computer vendors, that GeoWorks has become a respected standard even before its first birthday.

John Dvorak

Columnist, Etc.

There's no stopping this man. Not satisfied with an infinite number of columns, a radio show, and his own book series, he's now going into the software business! First product is a reissue of Force, a dBASE compiler, due Real Soon Now.

Esther Dyson

Editor and Publisher
Release 1.0

One of the most respected analysts in the industry, Dyson not only spots trends, she catalyzes them—e.g., high-tech ventures in the erstwhile Soviet Union and other Eastern European countries. Her newsletter is widely considered the most reliable source of information about the present and future state of computer technology. If she's ever speaking at a meeting in your area, go, listen, and ask questions.

Kamran Elahian

President and CEO
Momenta

It's too soon to tell whether Momenta's unique "pentop" computer, a DOS-based PC notebook that accepts handwritten input and runs standard business applications, will be a runaway success or another of the industry's noble failures. But the little machine, which resulted from entrepreneur Elahian's frustration at not having a computer he could take to meetings, incorporates state-of-the-art technology and offers the benefits of pen computing now to users who don't want to throw out their Lotus spreadsheets quite yet, and represents a set of capabilities not currently available anywhere else.

Larry Ellison

President, CEO, and Chairman
Oracle Corporation

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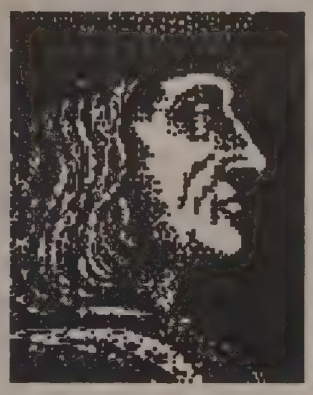

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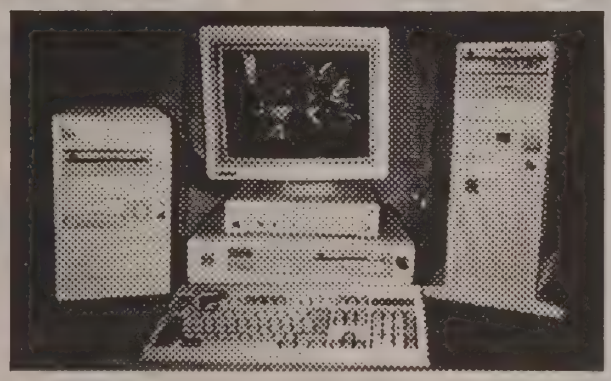

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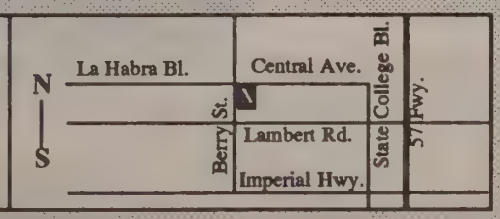

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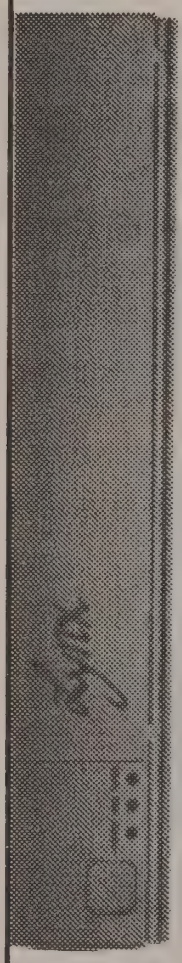

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- 64K Cache RAM
- VGA Adapter 1024x768 w/ 512K RAM
- 80387DX Coprocessor Socket
- 4MB Memory (up to 8MB)
- 64KB ROM, Phoenix BIOS
- 3 1/2" 1.44MB Floppy Drive
- 2 Serial, 1 Parallel Port, IDE HDC
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- 80386-16SX MHz CPU (386-20SX Optional)
- VGA Adapter 1024x768 w/ 1MB RAM
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- 1MB Memory (up to 4MB)
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Comedge 286-16 $675

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- 80287 Coprocessor Socket
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- 64KB ROM, Phoenix BIOS
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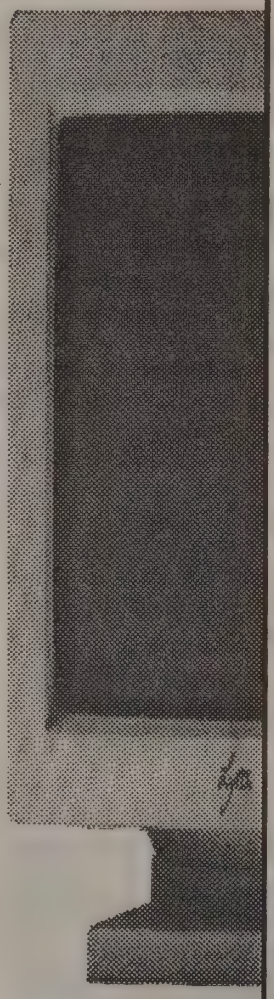

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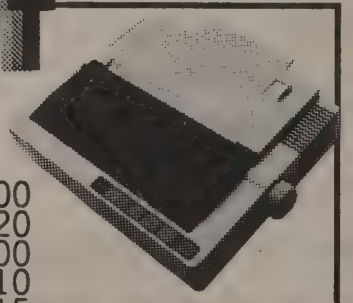

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unprecedented setbacks, including its first-ever loss and a management shakeup that left founder Ellison facing some formidable challenges. However, reports of Oracle's demise turned out to be seriously premature, as Oracle rebounded this year by surpassing the billion-dollar sales mark for the first time in its history, making it one of only three software companies in the world to do so.

Not only is the company enjoying its customary healthy profits, its longtime strategy of porting its software to systems from PCs to mainframes is paying off considerably as the business computing world finds it ever more necessary to move information seamlessly through all of its computing environments.

Mark Eppley

Chairman and CEO
Traveling Software

Eppley's commitment to making life easier for portable computer users dates back to 1983 and the dawn of the Radio Shack Model 100, and he's keeping the company on the cutting edge going into the '90s, with the goal of achieving what he calls "no-penalty portability" as the focus of computing moves from the desktop to practically anywhere the user happens to be.

In his paper "The Extended Office: Toward Communications-Centric Computing in the 1990s," Eppley explains: "The most significant technologies, such as the telephone, are transparent to the user because they become so matter-of-fact that they are assimilated into everyday life. The 1990s will see the emergence of computers that are viewed in this way. Computers will be used much more like telephones are—necessary tools we use daily without giving them a second thought."

Moving toward that goal, Eppley is working to create links with such emerging technologies as pen-based computing and voice recognition, creating an environment in which the equipment is smart enough to navigate the configuration jungle for itself and achieve plug 'n' play communications. A key element of this strategy is Traveling Software's recently announced Universal Communications Object—already licensed to Hewlett-Packard for its palmtop machines and to Slate, the pen-centric software developer.

Eppley compares the UCO to "a Lego block—a consistent, independent module that can be plugged into any software application and provide a service. It will act like the gatekeeper, pump, and channeler—all at one time and with a great deal of intelligence about its environment," able to recognize the hardware it's on and configure itself accordingly, reestablishing interrupted connections automatically, and supporting a variety of platforms including DOS, UNIX, OS/2, and Windows.

Gordon Eubanks

Chairman, President, and CEO
Symantec Corporation

By laying a foundation with strategic acquisitions and a team-based approach to product development, Eubanks has built a strong company with a high rate of customer satisfaction and a broad range of products for platforms including Mac, DOS, Windows, OS/2, and UNIX. Unlike most software-company leaders, Eubanks has chosen to capitalize on becoming the leader in lucrative niches—last year's acquisition of Peter Norton Computing has allowed Symantec to surpass Central Point in the DOS-based utilities marketplace; more recent arrivals like GreatWorks, an integrated

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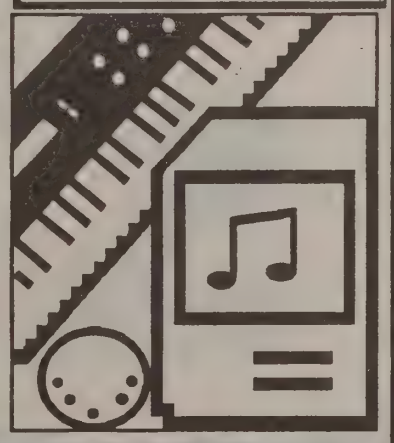

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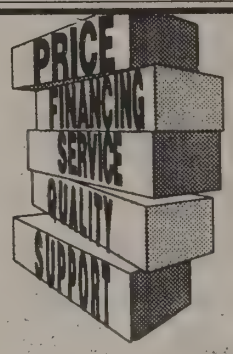

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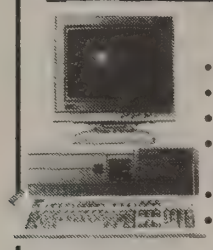

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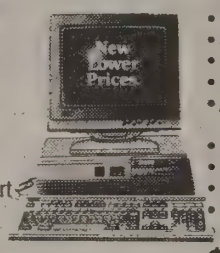

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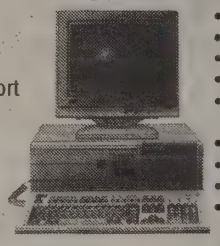

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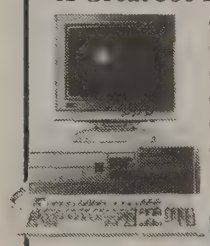

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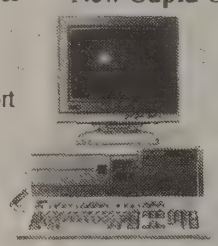

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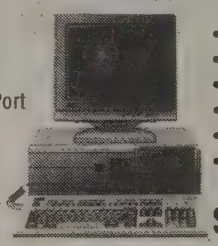

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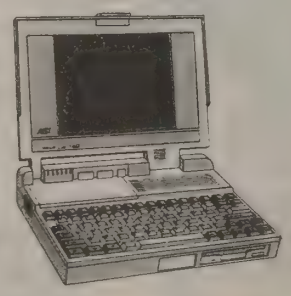

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package that's finding favor among entry-level Mac users, and Zortech's C++ compiler, a well-received object-oriented programming tool, illustrate the diversity and excellence of the company's product offerings.

Amnon Even-Kesef

President
ASP Computer Products

A reader who prefers anonymity wrote us suggesting that we should find out who runs this Sunnyvale company and put him on this year's list. And after talking to a few happy ASP employees and hearing the reader's tale, we were very glad to do so.

The reader explains why he's so crazy about ASP: "I have a computer. My secretary has a computer. We are several offices apart from each other. I'm self-employed with one employee. I haven't networked yet, because compared to the cost, sneaker-net seems to work fine. There just isn't the need to exchange a lot of files.

"But I need to print. And my perfectly wonderful DeskJet is on my secretary's desk. ASP has offered me the perfect low-cost solution to my problems. I scan ads of a lot of computer publications, and I have seen nothing offered by anyone else for what this does. My setup cost under $200.

"The ASP Snap Transmitter connects to my printer parallel port, and 2 inches out the back end comes an RSJ-11 [telco] plug. I use "straight-thru" (not "twisted pair") phone wire to go into my wall, through the switchboard of the office of which I am a sub-tenant, and into the wall next to my secretary's desk. From there into her computer and again with phone wires, to a Snap Receiver connected to the printer. Basically, I've traded printer cables and an auto-switch box for a telephone wire solution that is good for hundreds of feet. Under $200, how can I beat that?

"These people seem really innovative. When I had a UPS snafu, they were real helpful, and a service person was speaking pridefully of her company and its rapid growth. They have other low-cost printer solutions that are more sophisticated. The whole range of products seems unadvertised elsewhere. Somebody's gotta be doing something right at this company."

ASP employees, meanwhile, responded to our call by providing us with the usual dry biographical statistics but insisting that they didn't tell the true story. So they also supplied us with The Real Story: "Amnon is a high-energy (exhausting by some standards), dynamic, creative person...He demands the best out of himself and the people who work with him. He is fun to work with, and can often be seen in the halls, vociferously debating the aspects of some technology, marketing technique, or whatever with some individual—not necessarily because he disagrees (though you're never sure), but because he wants to make sure that every angle had been explored and that the best possible decision has been made. Although his instincts are right on, he is extremely approachable, and seems to have avoided the egotism that can be characteristic of bright, successful entrepreneurs. We think he's a lot of fun, but don't let him know we told you."

Clearly, this guy is doing something right!

Cliff Figallo
John Coate

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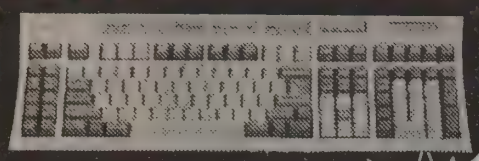

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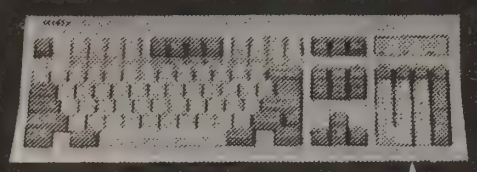

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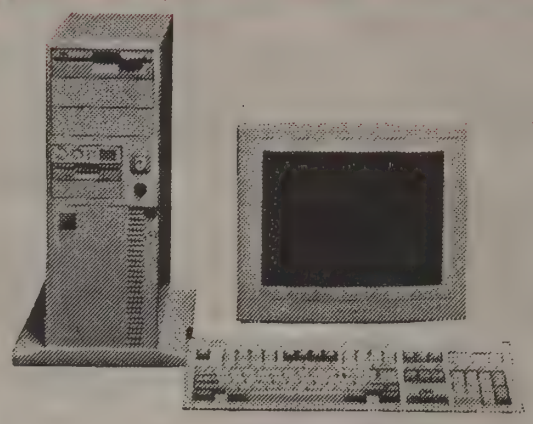

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- VEGA 486-33 M/B (UMC 486-33 M/B)
- Intel 80486-25 Microprocessor
- Built-on Math Co-processor
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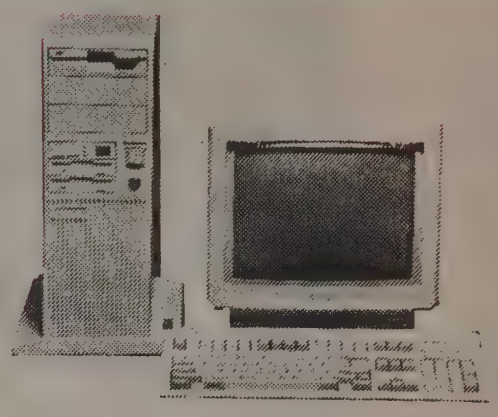
- 4MB Memory on Board
- Expandable to 8MB/16MB/32MB/64MB
- One TEAC 1.2 MB Floppy Drive
- IDE Floppy/Hard Disk Controller
- 2 Serial / 1 Parallel
- CS-35 Mid Vertical Case
- 230 Watts Power Supply
- Focus 6000 Keyboard
- 256K Cache + $85.00

ESSENCE 486-25SX System
$1030.00

ESSENCE 486-50C System
$1895.00



ESSENCE 386-33C System
$675.00

- 80386-33 Microprocessor
- 64K High speed Cache memory
- 1MB Memory on Board
- Expandable to 2MB/4MB/8MB/16MB/32 MB
- One TEAC 1.2 MB Floppy Drive
- IDE Floppy/Hard Disk Controller
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- Mini Vertical Case
- 200 Watts Power Supply
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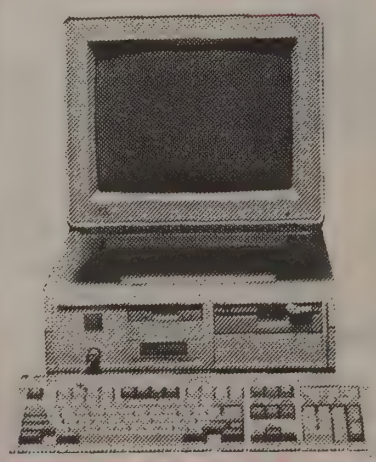
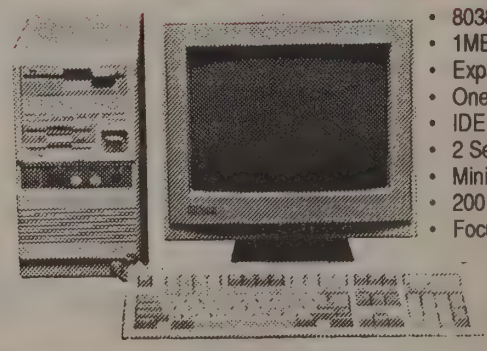
ESSENCE 386-40C System
$695.00



ESSENCE 386-25 System
$540.00

- 80386-25 Microprocessor
- 1MB Memory on Board
- Expandable to 2MB/4MB/8MB/16MB
- One TEAC 1.2 MB Floppy Drive
- IDE Floppy/Hard Disk Controller
- 2 Serial / 1 Parallel
- Mini Tower Case
- 200 Watts Power Supply
- Focus 6000 Keyboard



ESSENCE 386SX-16 System
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- 1MB Memory on Board
- One TEAC 1.2 MB Floppy Drive
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- Mini Tower Case
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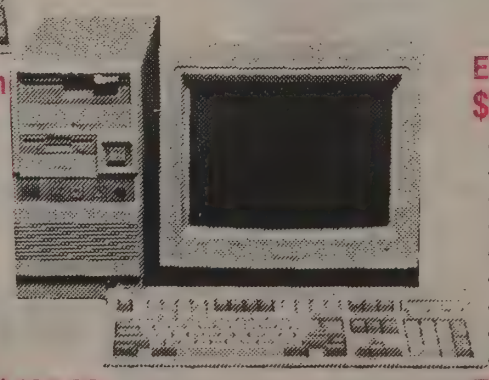
- Focus 6000 Keyboard

386SX-20 System $465.00

386SX-25 System $475.00



ESSENCE 286-12 AT System
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ATI Graphics VANTAGE (1.0MB DRAM).....$345.00

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ATI VGAWONDER XL 1.0MB (OEM version).....$170.00

High performance 16-bit VGA graphics. Displays up to 32,768 colors at 640x480 resolution. Plus custom CODE (Color Depth Enhancement) provides greater color depth for an effective 262,144 colors. Also displays 256 colors in 1024x768,800x600, and 640x480. Superior detailed 1024x768 and 800x600 graphics in non-interlaced and interlaced modes. Register-level compatibility in VGA, EGA, CGA, Hercules, and MDA. Supports 72Hz, 70Hz, and 60Hx refresh rates. With Mircosoft-compatible inport mouse +$30.00. The VGAWONDER XL includes up to 32,768 color drivers for Windows 3.X, 3D Studio and AutoSHADE with Renderman. AutoCAD anti-aliased line driver and AutoCAD display List. Plus Ventura, Lotus, Presentation Manager and others. In all, over 100 software drivers are available in the markets. Works with Windows 3.X software packages that support 24-bit and 15-bit file formats such as TARGA and TIFF.

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Compatible Monitors- Multi-frequency analog monitors supporting refresh rated to 72Hz, Single-frequency analog (e.g. IBM 8513), IBM 8514 Display or compatibles.

Driver Support- Windows 3.x, AutoCAD 10 (286), AutoCAD 10 (386) AutoCAD 11, MicroSoft Word, WordPerfect, Lotus 1-2-3, Generic CAD, Microstation, GEM, VersaCAD, P CAD, Ventura Publisher, PCAD, Ventura Publisher, CADance, Cadkey.

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click, and the users often an obstreperous lot. But for all of that, The WELL is arguably the liveliest and most genuinely useful conferencing system around. Hundreds of conferences, hundreds of viewpoints. And somehow between the crashing disks, ill-behaved modems, frequent feuds, and other day-to-day crises, director Figallo and marketing director Coate, better known as the Vile Figtex, somehow managed to keep the system growing and the social fabric from unraveling.

At year's end, Coate departed to help launch a US version of Minitel, the low-cost conferencing system that galvanized France and spawned an astonishing range of online cottage industries. We await the results with great interest.

Chuck Forsberg

Author
ZMODEM

Suggested by reader Phred Heutte, a happy user of his product, Forsberg is a hero to online users everywhere because of his constantly improving ZMODEM software.

Says Heutte: "Chuck Forsberg devised and continues to revise the ZMODEM file transfer protocol. In the last year, after slowly rising to prominence in the BBS world, it suddenly became a 'standard requirement' for comm programs to support, for example in *PC Magazine*.

"There are quite a few important features in ZMODEM—being able to send a batch of files automatically, 32-bit CRC, end-to-end rather than packet-by-packet error checking, automatic file recovery starting where the previous transfer broke down, and so on. Plus Chuck has made a big effort to distribute ZMODEM on lots of different architectures and OS environments.

"All of this sounds very techie, and it is, but there's no doubt that Chuck really understands the glorious mess of serial devices and data transmission over phone lines and modems and all that stuff.

"Nobody will ever accuse Chuck of writing code for the masses. ZMODEM is most notably available through dsz, his MS-DOS file transfer program, which is distinguished by the single most complex command line I know of (outside of C compilers) and absolutely impenetrable documentation. It's an old-fashioned way to develop a standard, but because of the way data communications works it's probably the only way, anymore, unless you want to spend a decade wrestling over X.400 on some damn committee.

"Chuck's work has made ZMODEM a reliable, sophisticated, tough, efficient, and widely available file transfer standard, and I think it's time he got some recognition for it. ZMODEM has sure added to my own productivity, and there aren't really very many software apps that can stake that claim."

David Fry
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Kathryn Kolder

Fry's Electronics

Before "superstore" was a buzzword and an ever-more-predominant approach to computer sales, the Fry brothers and Ms. Kolder, who deals with most of the retail giant's day-to-day operations, pioneered the idea. It's been so successful that the Bay Area Fry's stores are a mecca for the technical community and a favorite stop of Japanese tour buses, and the Fry's phenomenon is due to hit Manhattan Beach as the

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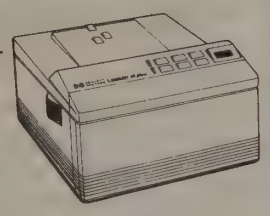

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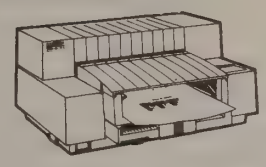

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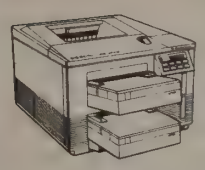

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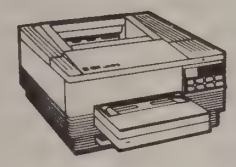

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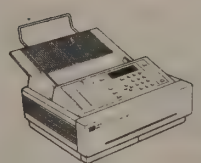

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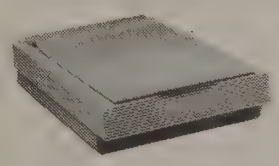

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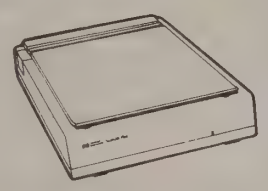

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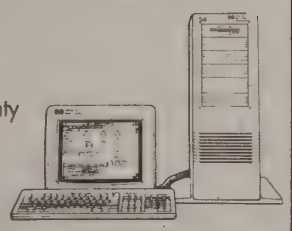

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William H. Gates

Chairman and CEO
Microsoft

Aside from the fact that Microsoft posted record growth and earnings, which is hardly news at this point, it was a pretty interesting year. The company's long-standing association with IBM crumbled as Microsoft gave up on OS/2 and decided to devote its energy to developing the enormously successful Windows for emerging platforms, from pen-based machines to UNIX workstations.

Never mind the aspersions Gates cast on UNIX in our interview with him last year...this year Microsoft is a founding member of the ACE standards group, along with such UNIX stalwarts as DEC, Silicon Graphics, and SCO, as well as a host of PC manufacturers.

In another alliance for the future, Microsoft announced the Multimedia PC. And, not forgetting its oldest customers, it shipped the well-received DOS 5.0.

But the most spectacular success was with Windows. Not only was Windows 3 one of the best-selling software packages in history, Microsoft didn't dally, like many of its competitors, in developing products for it. Consequently, as Lotus foot-dragged, Excel stole its customers. Word for Windows was a big winner, and at year's end the all-new Works for Windows and a host of products from Publish to Money were doing well with critics and customers.

Fred M. Gibbons

President and CEO
Software Publishing Corporation

This year Gibbons sharpened his company's focus on the corporate market, selling the entry-level PFS: product line to Spinnaker and rounding out the suite of business applications with the acquisition of the British company Precision Software Ltd. Precision developed and markets Superbase 2 and Superbase 4, leading database products in the Windows market.

In addition, Gibbons reorganized the company in order to promote better cross-platform development and coordinate the marketing of its various products. The company continues to dominate the DOS-based corporate graphics market with the latest version of Harvard Graphics, and the Windows version is due any day now, positioning SPC to take advantage of the next generation of PC hardware and operating systems.

We'd also like to salute Gibbons for a somewhat unusual Industry Innovation—the "Event-On-A-Disk." Instead of having yet another overblown press conference, SPC decided to launch Harvard Graphics 3.0 and Harvard Graphics for Windows by mailing press kits and munchies to journalists (thereby reducing gasoline consumption, traffic congestion, and editorial burnout), and donating the savings to Project Literacy. We hope this represents the start of a trend...

Judge Harold H. Greene

U.S. District Court

Practically everybody has seen those commercials—full-size full-motion video on the wall of your living room, letting you tour art museums or have Thanksgiving dinner with your family on the other side of the country. All brought to you by your friendly local RBOC, aka The Phone Company. If only Judge Greene would go away.

Judge Greene, who wrote the 1982 antitrust decision breaking up the AT&T monolith into seven Regional Bell Operating Companies, has been something of a thorn in the side of the Baby Bells because he's steadfastly refused to let them get into the "information services" market (or, for that matter, the long-distance business). And while his 1987 decision reinforcing this point was overruled in 1990 by the US District Court of Appeals for the District of Columbia, compelling him to withdraw the prohibition (with extreme reluctance), he kept the ruling from taking effect until it could be appealed by its opponents—which include, among others, most print-publishing associations.

Greene's position is one of the most hotly debated issues in the industry, but he's proceeding from serious concern about re-creating the very anticompetitive situation he's charged with eliminating. As he wrote in the ruling: "The most probable consequences of such entry by the regional companies into the sensitive information-services market will be the elimination of competition from that market and the concentration of the sources of information of the American people in just a few dominant, collaborative conglomerates, with the captive local telephone companies as their base. Such a development would be inimical to the objective of a competitive market, the purposes of the antitrust laws, and the economic well-being of the American people."

And, at year's end, the latest campaign by Southwestern Bell to charge commercial business rates to non-commercial BBS systems, thereby putting most of them out of existence, suggested that the Judge's worries are not utterly unfounded.

Andrew S. Grove

President and CEO
Intel

It was an interesting year at microprocessor giant Intel. Though facing challenges from other chip vendors, notably AMD with its 386-compatible CPUs and the growing popularity of the SPARC standard, Intel handily retained its domination of the PC marketplace. The popularity of Windows 3, with the attendant demand for more powerful hardware, seems likely to ensure a comfortable edge for Intel well into the future, regardless of emerging rival standards.

Nonetheless, Grove has never been one for complacency or betting the entire company on a single product line. Among the more interesting efforts currently in progress is the DVI (digital video interactive) standard, which may soon achieve commercial viability with the growing demand for multimedia products.

But in the meantime, taking advantage of a current market need, Grove launched what is, for Intel, a new venture—a division specializing in a full range of networking products "intelligent" enough to take much of the pain out of LANs. Initial reports are highly positive.

W.M. (Trip) Hawkins

Chairman/President and CEO
Electronic Arts/SMSG, Inc.

While most US game vendors decided to stay away from the new 16-bit platforms offered by Sega Genesis and Nintendo, Hawkins, who's always had a great understanding of the consumer software market, decided to support them aggressively. Now, against much conventional wisdom, 16-bit cartridges are one of the company's big moneymakers.

By way of preparing for the Next Big Thing, interactive multimedia, Hawkins is now the president of a new startup, SMSG, Inc. (which, he claims facetiously, stands for "San Mateo Secret Guys"). A joint venture of Electronic Arts, Time Warner, and leading VC firm Kleiner Perkins Caufield and Byers, the startup sets itself the goal of helping entertainment software companies take advantage of emerging markets in interactive multimedia.

And if there's anything Hawkins knows, it's emerging markets. As he said in announcing the SMSG launch, "Computers are becoming audiovisual while consumer electronics are going digital. There is huge potential for a vast interactive software market to emerge. Electronic Arts is already a leader in interactive software. With Time Warner's global leadership in information and entertainment, and KPCB's record for technology innovation, we are starting with outstanding partners." Indeed.

Larry Heimendinger

President and CEO
Nantucket Corporation

Heimendinger's company has been one of the big winners in the database wars, taking advantage of Ashton-Tate's difficulties to acquire impressive new market share. In the two years since he's been overseeing the company's operations, Heimendinger has almost tripled Nantucket's revenues and opened offices in Brazil, Japan, Belgium, Canada, and the Soviet Union.

Craig Hickman

Author
Kid Pix

It takes a rare talent to create software that's equally entrancing to kids and adults. Hickman did it. We've lost count of the number of adult Power Users who explain that they bought Kid Pix for the kids, and the kids love it, but the fun really starts when they abandon the computer to the Parental Units. Great software from Brøderbund is nothing new, but Kid Pix is in a class by itself. We hope it isn't for long.

Stephen Hill

Producer
Hearts of Space

Reader Greta Bickford, who works at Backroads Distributors, a New Age music mail order house in Corte Madera, writes in to nominate Hill, who produces the nationally syndicated space-music program *Hearts of Space*. Hill is, by all accounts, an effective evangelist for what people can do with computers.

She says of Hill, "He keeps mentioning The WELL on his radio show, thereby alerting large numbers of people every week to the fun to be had in electronic communication/BBSing. We get quite a number of requests here at work for info about The WELL because somebody in middle America heard about it on *Hearts of Space*...and I'm convinced, from talking to these people, that most of them are looking at computers in a new way because of these mentions."

She adds, "The Hearts of Space record label, under Stephen's direction, creates 100% of their album cover art on Macintoshes and puts the info on the covers, thereby increasing awareness of the artistic possibilities of computers..."

Dave Hughes

Operating Officer
Old Colorado City Communications

Whether it's setting up a BBS so that artists on remote Indian reservations in Montana can display and sell their art via computer, or coordinating a project in which an MIT professor taught Chaos Theory to an online "class" of students across the country, computer populist Hughes keeps pushing the limits of what people in all walks of life can do with the tools of telecomm.

On the principle that there's no substitute for a little face-to-face contact, he put together the first Telecomm Trappers' Rendezvous, a gathering of online folks from around the country in a remote section of Wyoming.

1991 also marks the historic acquisition of Dave's First Mac, an event likely to have far-reaching effects on the advent of the NAPLPS graphics standard (which enables Indian Art to be very small files, and professors to transmit handwriting to terminals across the country) in the Macintosh world.

Steve Hui

Chairman and CEO
Everex

Like many other PC hardware vendors, Everex has been feeling the crunch lately as the market becomes fiercely competitive and price-sensitive. Fiscal 1991 showed a $48 million loss, and Hui joined forces with President Harold Clark to bring the company back to profitability. They've succeeded in this goal, partly because of the success of

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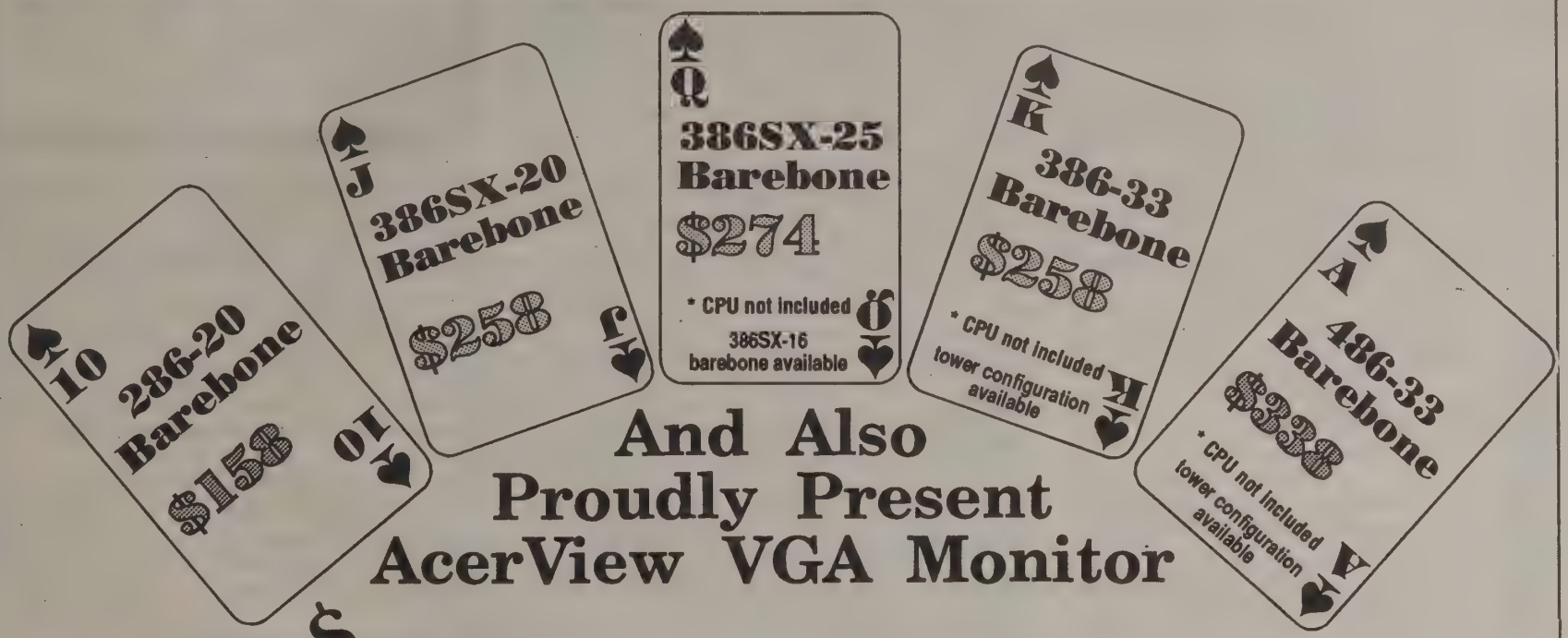

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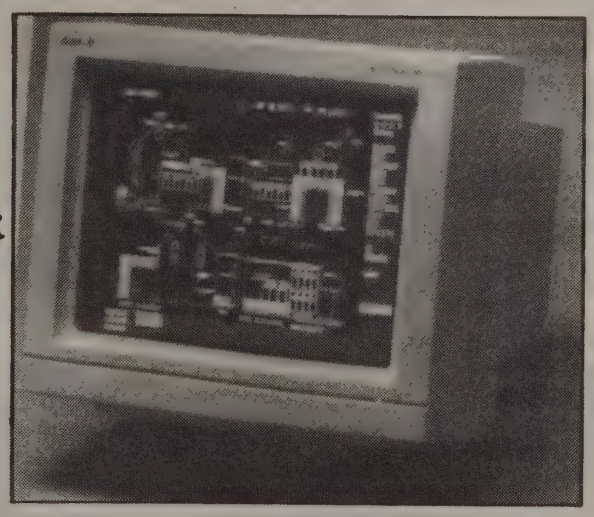

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Everex's relatively high-margin Tempo notebook computer line.

Like others in the industry, they've also scaled down the range and number of their products, eliminating a significant number and developing a unified strategy. Despite the hard times, however, they've kept the customers happy. During 1991, Everex finished first in the Dataquest poll of PC Customer Satisfaction, and did likewise on a similar survey by *Computer Reseller News*; it also came in fifth in a field of ten computer manufacturers in J.D. Power's first-ever Index of End-User Satisfaction.

Tim Jenison
President

Paul Montgomery
Vice President
NewTek

Youthful inventor Jenison and former Electronic Arts employee Montgomery met in 1986, not long after Montgomery had founded the first Amiga user group in the Bay Area and Jenison started selling DigiView. A little brainstorming, and they came up with the idea for the Video Toaster, a product which has probably sold more Amigas than all of Commodore's marketing efforts combined and opened up Desktop Video to people without megabudgets. However, soon you won't have to buy an Amiga to get your own Toaster—Mac and PC versions are due out (finally) in early 1992.

Steven P. Jobs
President and CEO
NeXT

Not only did the long-prophesied Death Of The Cube fail to take place in 1991, Jobs succeeded in selling a respectable number of the black workstations and convincing both buyers and developers of the NeXT's technical superiority. All is not rosy at NeXT—it's suffered the consequences of chameleonic marketing strategies and a dealer channel that often ranged from troubled to nonexistent. But the excellence of the machine itself and the sheer determination of Jobs to make it succeed lend credence to the notion that these problems, too, will be solved.

And as the industry hops en masse onto the object-oriented programming bandwagon, Jobs is not loath to point out the many virtues of the NeXTstep development environment, which has already enabled developers from startups to the venerable WordPerfect to create amazing NeXT applications in a fraction of the usual time—a distinct advantage in these competitive and cost-conscious times.

Reese Jones
Chairman and CEO
Farallon Computing Inc.

Farallon has grown remarkably since the day a few years back when BMUG founder Jones stood up in a meeting brandishing some phone line and announced BMUGnet. In order to address the ever more complex needs of his growing customer base, Jones made a couple of significant changes in 1991. First, after serving as president, chairman, and CEO since the startup days, he went out and hired a president, Alan Lefkof, former president of GRiD Systems. Lefkof's extensive knowledge of the mobile computing world is expected to be a major asset to Farallon as remote computing becomes a crucial part of its business. Later in the year, Farallon made the strategic decision to focus entirely on its networking operations, and sold its popular MacRecorder product to multimedia leader MacroMind.

Jerry Kaplan
Chairman and Cofounder

Bill Campbell
President and CEO

Robert Carr
Vice President of Software and Cofounder
GO Corporation

Take a couple of wizards (Kaplan, the former chief technologist at Lotus, Carr, former chief scientist of Ashton-Tate) and add a former football coach and longtime market development expert (not only was Campbell instrumental in the success of the Macintosh at Apple and the man who led the building of Claris, he's the only CEO we've ever heard of whose former employees took out full-page ads to bid him a touching and affectionate farewell), and you've got a pretty interesting company right there.

But that's the least of it. Against formidable odds, GO launched its built-from-the-ground-up object-oriented operating system for pen-based computers, attracted an impressive array of developers, and generally turned out to have one of the most interesting technological innovations to come to light in the past year.

While the company faces serious obstacles, not the least of which is Microsoft's rival PenWindows system, it's also garnered a lot of respect from former skeptics and the development community, and is certainly going a long way toward defining the more humanized computing environments of the future.

Mitch Kapor
President and Cofounder
Electronic Frontier Foundation

Since Lotus founder Kapor cofounded the EFF last year, he's spoken at countless meetings, hearings, and conferences, not to mention the occasional congressional committee, on a wide range of issues regarding the evolution of computer-based communications, from civil rights to computer crime to constitutional protections. Just as significantly, he's caused the organization to intervene on behalf of individuals caught in the middle when the law goes awry, most notably in bringing suit with game publisher Steve Jackson against the law enforcement agents who all but destroyed Jackson's business in the course of a now-notorious sealed-warrant fishing expedition.

As contributing writer Fred Lieberman puts it, "I think Mitch Kapor's work with EFF affects everybody, from micro- to super. But the Supers can usually guard their own freedoms, or hire lawyers to help. So EFF is disproportionately helpful to the micros..."

Guy Kawasaki
Columnist
MacUser

Kawasaki's column is a favorite source of irreverent MacInfo, but he's also been unusually busy with outside projects in the last year. Two of the more noteworthy were books: One, *Selling the Dream*, is a hilarious and thought-provoking treatise on guerrilla marketing that ought to be read by every technoid with an idea that wants to become a company; the other, *Database 101*, is an excellent introduction to the subject aimed particularly at the first-time user and anybody else whose instinctive reaction to setting up databases is sheer panic.

Gary A. Kildall
Chairman and Founder

Dick Williams
President and CEO
Digital Research

Students of computer history will recall that back before the IBM PC, Kildall and his company came up with the first widely accepted standard operating system, CP/M, and, for various still-discussed reasons, missed the boat with the IBM PC. For the intervening decade they've existed in relative obscurity, developing assorted specialized operating systems, graphics packages, and the like, with their DR DOS operating system always maintaining a devoted cult following amid those who preferred it to the Microsoft version.

No one's going to accuse Digital of obscurity this year. Bill Gates himself allowed as how DR DOS 6 was a significant competitor to MS-DOS, and while this may have been an exercise in professional courtesy on his part, hordes of new and old customers agreed with him, often finding that Windows 3 ran better under Digital's operating system than Microsoft's.

And in a year characterized by startling mergers, alliances, and acquisitions, Digital was involved in one of the most noteworthy—a merger with Novell which made Digital a wholly owned subsidiary of the networking giant. Results in the collaborative-computing area should be interesting.

Man of the Year

Philippe Kahn
President, Chairman, and CEO
Borland International

Borland's acquisition of Ashton-Tate (see cover story) easily qualifies as the industry bombshell of the year. But Kahn's commitment to customer satisfaction and determination to innovate, not litigate, have put an end to the long-running courtroom warfare over the dBASE language and cleared a path for future directions in database development. One can only hope Lotus's suit over Quattro Pro's use of its command set comes to a similarly happy resolution.

L. William Krause
Chairman
3Com
Chairman
PenSoft
President and CEO
Storm Technology

Krause retired as president and CEO of 3Com, a company he'd built from the startup stage, in the fall of 1990. In the meantime, while remaining as chairman at 3Com, he's also become involved in two quite different startups, both positioned to take advantage of emerging markets.

The first, PenSoft, is a leading developer of applications for pen-based computing. The second, Storm, is a key supplier of JPEG-based image compression, an essential component of publishing, multimedia, and related applications.

Krause seems to have an affinity for startups and an ability to help them become industry standardbearers. As he said on the occasion of joining Storm in December, "Storm today is where 3Com was when I joined it. Just as 3Com's Ethernet made today's pervasive networking practical, Storm's enabling technology will dramatically increase the use of color images in printed documents and computer applications."

David Liddle
Vice President, New Systems Business, Personal Systems Division
IBM

Xerox veteran Liddle founded Metaphor in 1982 and served as president and CEO, and also was the president of the Metaphor/IBM joint venture Patriot Partners. A pioneer and leader in the fields of user interfaces and client-server technology, he played a key role in the IBM-Apple technology agreement and will be instrumental in the development of resulting products, particularly at the new operating system company Taligent.

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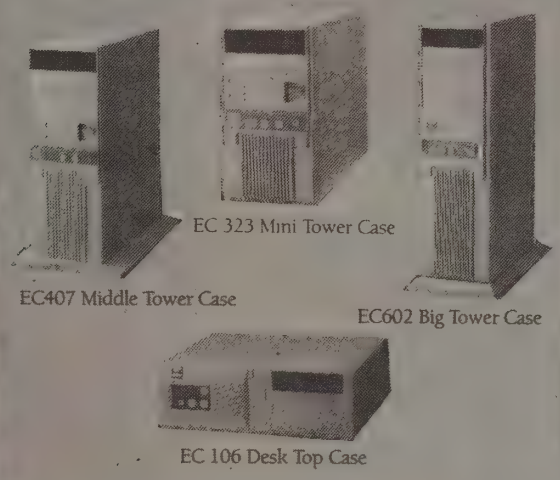

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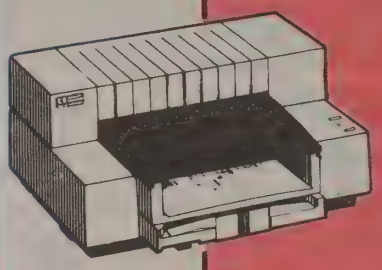

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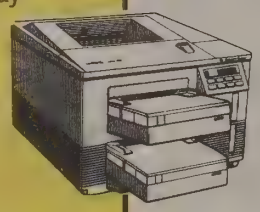

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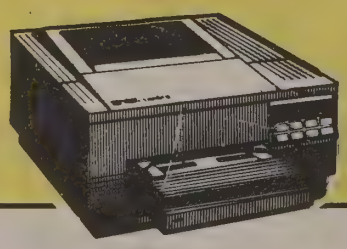
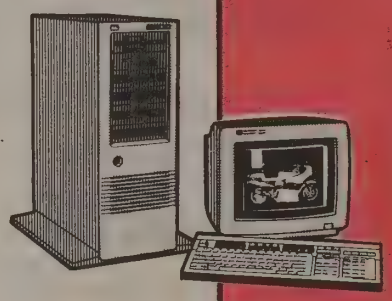


HP VECTRA COMPUTERS 486/33T



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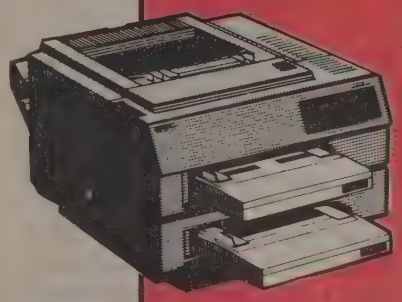

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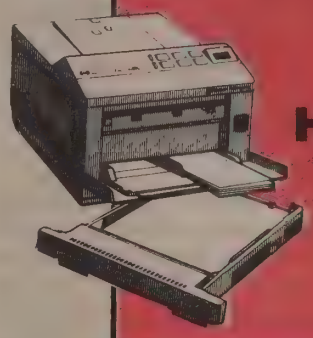

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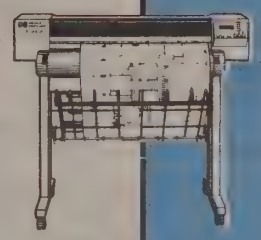

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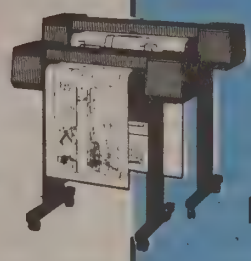

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- 8 pen selection
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- Multimedia output

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- 8 pen selection
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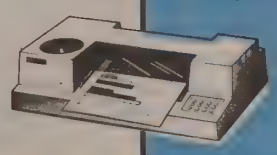

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Acer America
Liu has brought the US branch of the Taiwanese hardware giant to an eminent position in corporate computing, with a strong presence in the dealer/VAR channel and growing popularity in the consumer market. Acer has introduced such cost-cutting innovations as its "Chip-Up" upgrade technology, which allows users who need better system performance to simply buy more powerful off-the-shelf Intel CPUs and plug them into the motherboard, thereby saving both money and grief.

Responding to the growth of networking and the UNIX market, Acer acquired Altos Computer Systems, a pioneer in multiuser technology, and the two companies have formed alliances with such key players as Intel, Microsoft, Novell, SCO, and Informix.

Gilman G. Louie

CEO
Spectrum Holobyte
Louie, who has clearly never lost his passion for games or his instinct for what makes a great one, had quite a year.

While his company's games, from Tetris and its progeny to race car and jet fighter simulations, continued to sap the national productivity by siphoning off hours from the lives of people who were supposed to be working, military commentators also fueled impassioned debate by suggesting that young soldiers who grew up flying Spectrum's jet fighters on their PCs were a vital component of the nation's military superiority during the Gulf War.

But while Louie kept the great games coming all year, his greatest coup was beating all the entrenched developers in the field by bringing the first Virtual Reality product to the consumer market, creating several very impressive interactive total-immersion games for the British-manufactured Virtuality system. It's currently being installed in arcades around the country, and even at a dollar a minute, attracting hordes of customers. Ironically, the heart of the machine is an Amiga 3000, proving once again that third-party vendors seem to have better ideas of what to do with Commodore's computer than Commodore manages to think of for itself.

One cloud on the horizon is that Spectrum and its parent Sphere are owned by the multitentacled Robert Maxwell empire and therefore face an uncertain future. We hope it all works out—this company is much too good to die.

Gene Lu

Chairman, President, and CEO
Advanced Logic Research
While many PC hardware vendors had a rough time this year, ALR prospered and reported its best-ever earnings. Lu's emphasis on making high performance affordable, notably with the modular "Just Upgrade The CPU" approach to letting customers take advantage of rapidly advancing chip technology, has made ALR products increasingly popular with cost-conscious buyers, from individuals shopping the retail channel to large-volume corporate accounts.

Macintosh PowerBook Development Team

Apple Computer
Much propaganda has emanated from Cupertino over the years about "the power to be your best." Apple even trademarked it.

Well, apparently some of those engineers took the notion to heart. While there's definite room for improvement in Next Year's Models, these are quite possibly the finest machines Apple's ever made.

And now the bad news. Speaking at the PC Outlook conference, Chairman and Chief Technical Officer John Sculley allowed as how the exceptionally popular PBs might be out of back-order by the end of the second quarter of 1992...

Jim Manzi

President and CEO
Lotus
It's been a year of mixed blessings for Manzi and Lotus. On the one hand, flagship product 1-2-3's market share was significantly eroded in the Windows marketplace due to the company's admitted failure to anticipate the enormous popularity of Windows 3.0 and allocate development resources accordingly, so that by the time Windows 1-2-3 came out a large number of users had switched to Excel.

Also on the downside, but to Manzi's credit, is that he pulled the plug on the ambitious CD-ROM database project Lotus Marketplace: Households after three hundred thousand private citizens objected to the sale of their personal data and demanded to be removed from the listings.

Regrettably, Lotus hasn't seen fit to drop its litigious approach to look-and-feel, either.

And on the other hand, Manzi seems to be well along in the process of moving Lotus from a single-product company to a provider of across-the-board solutions. Ports of 1-2-3 to virtually every significant computing platform (including the long-awaited and recently shipped Macintosh version) are well under way; Ami Pro 2 is making good headway at becoming the word processor of choice in the Windows environment, eroding the constituencies of such longtime stalwarts as WordPerfect and WordStar; Notes and cc:Mail have proved valued tools for collaborative computing in networked environments and are key components in the company's future evolution.

Scott McNealy

President and CEO
Sun Microsystems
McNealy continued to keep his customers and shareholders happy in 1991 with gratifyingly high sales and profits, with the commercial sector the fastest-growing portion of its customer base.

Acting to keep flexible and competitive in the changing times ahead, McNealy split the Sun into five separate operating companies, each specializing in a particular function—Sun Microsystems Computer Corporation, which supplies hardware; SunExpress, to deliver non-system SPARC products; Sun Microsystems Laboratories, for R&D; SunSoft and Sun Technology Enterprises, which develop software and some hardware for SPARC and other standard UNIX environments.

Also in 1991 Sun's internationalization efforts paid off significantly, as for the first time its sales outside the US exceeded domestic sales.

Larry Michels

President and CEO

Doug Michels

President and CEO/Senior Vice President
The Santa Cruz Operation
This father-and-son team has taken the still-private company from startup in 1979 to a global organization with major presence in eleven countries. Their specialty—UNIX software systems for Intel-based computers. And despite recent inroads by Southern California's Interactive (recently acquired by Sun to port the Solaris operating system to Intel platforms as part of its strategy in multivendor environments), they're the leaders in that market.

In 1991 SCO, part of the ACE consortium, shipped its latest release of the SCO Open Desktop development system, which provided enhanced tools to allow software vendors to create networked graphical UNIX applications for Intel and MIPS platforms.

Asked at the PC Outlook conference whether he considered Solaris a threat, the senior Michels was unconcerned, saying it took a lot of relationship building with hardware vendors to make system software work well. Not only does SCO have a twelve-year edge in relationship building, but it's not unlikely that Intel hardware vendors might look askance at close relationships with aggressive rival Sun.

Nathan Morton

President and CEO
CompUSA
Morton scored a major coup this year with the deal by which CompUSA became an authorized dealer for most of the Macintosh product line. He also compounded the national superstore's success in the Southern California market by opening stores in the Bay Area, further reinforcing the conviction of many observers that superstores are the computer-retailing Wave of the Future.

Tim Mott

President and CEO
MacroMind
Reader Jim Mayer says of Mott, "In addition to engineering the MacroMind-Paracomp merger, he's a guy with significant ideas about the future of computing." Indeed, in a year at MacroMind, Electronic Arts veteran Mott has given the multimedia-company-in-search-of-a-market a sharp focus and winning strategy.

Among his accomplishments—a merger of MacroMind with Paracomp, bringing some great 3-D modeling technology to the company, and the acquisition of MacRecorder and other multimedia-related products from Farallon, which decided to focus on its networking business.

Therese Myers

President and CEO
Quarterdeck Office Systems
Another ongoing success story, Quarterdeck went public with its first stock offering this year. As for its product line, Myers's commitment to customer service and helping users get the most out of their PC hardware without spending big bucks led DESQview to a new dimension with the arrival of DESQview X, a product that allows users to access and developers to create applications that run on UNIX-based X Windows servers from the PC that's probably what they have on their desktops.

Ray Noorda

Chairman, President, and CEO
Novell
Noorda has grown Novell from a small and relatively obscure contender to PC networking's leading standardbearer, and judging by the alliances he's implemented in the past year he's only getting started. In addition to the merger with Digital Research, which gave Novell access to excellent operating-system tools and considerable independence from Microsoft, he's joined forces with both Hewlett-Packard and UNIX System Laboratories (creators of UNIX System V) to build sophisticated networking platforms. Commenting in October on another year of substantially increased sales and revenue, Noorda was quick to credit these and other strategic partnerships as a vital element in the company's success.

Spreading joy among Novell stockholders, the company announced a two-for-one stock split in August. Hinting strongly at things to come, it's now describing itself as an operating system software company.

John Norstad

Author
Disinfectant
While other vendors have been known to sow hysteria about viruses and capitalize on user panic, Norstad takes a different approach. He keeps updating Disinfectant to meet the latest virus hazards in the Mac universe—and gives the software away. For which he receives the undying gratitude of thousands of Mac users trying to keep their data secure from marauding virus programs, which are probably not as ubiquitous as some would have us believe but are, nonetheless, a seriously disagreeable experience when it's your

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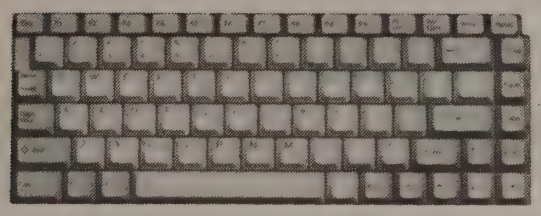
— Laptop Buyer's Guide November 1991

Ten years of quality design and manufacturing has launched NBCC to become the "third largest laptop manufacturer in Japan."
— Asian Computer Sources May 1991



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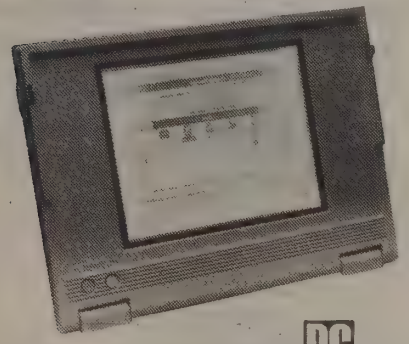
▼ Standard AT layout	▼ Cumbersome layout



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computer they happen to invade.

Peter Norton

Founder
Peter Norton Computing

Although the company is now owned by Symantec, Norton continues to be active, playing a vital role in steering its product development. Upgraded versions of Mac and DOS versions of the Norton Utilities shipped to hordes of happy customers during 1991, and the Norton Desktop for Windows brought those vital Norton tools to users of the bestselling new environment.

Joseph H. Oakey

President
Autodesk Foundation

Oakey, a forty-one-year veteran of the world of education, writes: "There is a loud and clear call to action which is being sounded nationwide: Public schools must be brought into the information age through radical restructuring; the responsibility for our schools belongs to each and every one of us; and the time to act is now!

"Through the Autodesk Foundation I have set out on an ambitious program to improve the quality of education for students in America. By designing model education programs and establishing partnerships to disseminate their successes nationwide, we plan to do our part in bringing schools into the information age.

"However, real and lasting change will come about only if many forward-thinking educators, business leaders, and community leaders work together in a spirit of cooperation and collaboration. We hope that our efforts will inspire other corporations, educators, and organizations to play an active role in transforming our educational system."

We concur with Oakey in thinking industry/education partnerships are long overdue, and applaud the Foundation's results so far, notably in the integrated studies program it's pioneered in Marin County.

Implemented in 1990 at Sir Francis Drake High School, the program Oakey helped create allows students to learn in an independent, interdisciplinary, and highly computer-based (students use software ranging from dBASE and Lotus 1-2-3 to Autosketch and Animator) environment, and also has them instruct younger students in the same subject matter. Despite a longer school year than conventional programs, it's a big hit with students, and its results have been impressive enough to win three more years of funding.

Ted Papes

President and CEO
Prodigy

Papes has taken a lot of flak all year for Prodigy's policies. The dread Censorship hot-button was pushed regularly, and Prodigy, which sees its business as marketing rather than providing a "free speech medium," insists on its right to "publish" only remarks that meet its standards. (According to a recent report on CNN, most rejected responses are pulled by machine-based keyword search, and only a few by its platoon of human "editors," which is, no doubt, partially responsible for the notorious inconsistency of the Prodigy Censors.)

Nonetheless, Papes has managed to build Prodigy to the second-largest online system in the country, after CompuServe. True, the people who want uncensored discussion and unlimited email tend to migrate to GEnie or America Online, but a growing number of home users—lured by the prospect of shopping from home, playing the stocks, checking the national weather, making plane reservations, etc.—are indeed deciding that they gotta get this thing.

Michael D. Pickett

President and CEO
Merisel

Merisel was created in 1990 by the merger of two huge computer product distributors, Softsel and Microamerica, and Pickett has managed the transition with flair, creating divisions to address the special needs of VARs, general retailers, Macintosh shops, corporate accounts, and workstations.

Despite the difficulties of company blending on a global scale, Pickett has scored some major coups in the last year: an agreement with Compaq to distribute its full line to the VAR channel, an exclusive deal to distribute Toshiba high-resolution monitors in the US, a major contract to supply consumer-electronics giant Circuit City with microcomputer products—and a ground-floor position distributing computer goods in the Soviet Union.

Ronald Posner

President, CEO, and Chairman
WordStar International

For the last couple of years, the once-preeminent publisher of word processing software has been the victim of changing markets and fierce competition, its customer base eroded by competition from WordPerfect, Microsoft, and Lotus/Samna's Ami Pro.

Posner, however, is a veteran expert at turning companies around, and in 1991 he restored the company to profitability and invested in key technology. The newly shipped WordStar for Windows is performing nicely, and the product line has recently been rounded out by the acquisition of Lifetree Software, renamed the Writing Tools Group. As part of its campaign to offer a full suite of writing tools, the latter group shipped a Windows version of Correct Grammar and acquired exclusive retail rights to the American Heritage Electronic Dictionary.

Jerry Pournelle

Columnist

Frequently cranky and always opinionated, Pournelle is nonetheless one of the best sources of information about the industry, its products, and its impact on the lives and work of users, power- and otherwise. Besides contributing a regular column to *Byte,* Pournelle is also a prolific science fiction author, which often results in interesting cross-cultural information—e.g. an allusion in *Fallen Angels,* of which he and coauthor Larry Niven were signing large quantities at the Computer Faire, probably did as much to increase awareness of the Steve Jackson case among the general public as did the myriad of discussions on the net.

Safi Qureshey

Cochairman and CEO

Thomas Yuen

Cochairman and COO
AST Research

Cofounders Qureshey and Yuen took their company into its second decade showing continued innovation, growth, and market acceptance. They point with pride to their recent placement at #3 (ahead of Compaq and Toshiba) on the J.D. Power "Personal Computer Customer Satisfaction Index," and note with satisfaction AST's international appeal, particularly in the demanding Japanese market.

As part of an effort to open the Japanese computer market to US hardware vendors, AST recently joined the Open Architecture Development Group, an organization formed to promote a standard operating environment in Japan's chaotic PC world.

Howard Rheingold

Author

Rheingold's timely book, *Virtual Reality* (Summit Books, 1991, ISBN 0-671-69363-8), has probably done more to make the VR concept accessible to civilians than any previous effort. Which is not only a boon to the developers of such environments, it's a catalyst for the creation of new worlds yet undreamed of.

Jack Rickard

Editor
Boardwatch Magazine

Available in both print and online versions, Rickard's one-time newsletter has grown to a hefty magazine that's considered *the* authoritative source of information and news about the world of bulletin boards and online systems. Rickard brings a unique editorial style and a considerable knowledge of his subject matter to his readers, and as more and more people acquire computers and modems and begin to navigate cyberspace, more and more of them are turning to *Boardwatch* for the latest tips, product information, and discussion of the issues from civil rights and deregulation to the relative merits of high-speed modems.

John Roach

Chairman and CEO
Tandy

Roach has shown himself a master of adjusting to changing market conditions and tapping emerging growth opportunities. He's managed to cut overhead and stay competitive in a cost-conscious industry—for example, by launching a new chain of low-margin warehouse-style superstores, Computer City, which offer not only Tandy products but also Compaq, Apple, and IBM. He also introduced the first low-cost Multimedia PC hardware and was instrumental in resolving the latest iteration of the Home Taping Menace issue with an agreement among recording industry associations allowing consumers to record digital music for their own use, with royalties paid by the manufacturers of recording equipment.

T. J. Rodgers

Founder, President, and CEO
Cypress Semiconductor

"The answer to our competive problems is not to turn more power over to the companies that helped create the problems. In America, the diversity of our companies, our technology, and our ideas is a national strength we must not abandon," said Rodgers recently in a *Business Week* cover story that billed him as "The Bad Boy of Silicon Valley."

"Bad" seems to be partly a function of being a major thorn in the side of large semiconductor companies. Rodgers' strategy of finding lucrative niches and spinning off subsidiaries to address them appears to be paying off nicely—as an early adopter and innovator on the SPARC platform, Cypress not only became the supplier of processors and memory chips for Sun's SPARCstation 2 line, it recently was chosen to provide SPARCore modules for Sun's new multiprocessor SPARCserver line. Cypress SPARC chips will also coordinate the avionics, flight control, and weapon systems on France's next-generation "Rafale" fighter aricraft.

Heidi Roizen

President and CEO
T/Maker Company

Taking advantage of T/Maker's first venture capital investment and the popularity of new Macintosh hardware from Classics to PowerBooks, Roizen seemed well on her way to doubling the privately held company's earnings over the previous year and made the unusual gesture of publishing its revenues, saying, "There has been so much talk in the

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market about Macintosh software sales not meeting the expectations of the market that we thought if we released our numbers, it might shed some new light on the situation. We believe our results prove that these new Macintosh customers really do buy software if it meets their needs."

And, whether it's the flagship WriteNow word processor, the ever-expanding ClickArt series, or creative collections like the SmartBundle and the new PowerBundle, T/Maker products show a continuing ability to anticipate and address the needs of a growing and diverse customer base.

Ben Rosen

Chairman
Compaq

Compaq started the year with words of cautious optimism from president/CEO Rod Canion, pointing out the excellence of its products but also the uncertainties ahead, from the effects of the Gulf War to a general slowdown in demand for new hardware.

By fall, ferocious competition from price-sensitive rivals for fewer and more cautious customers had Compaq in crisis and founder Canion ousted from the presidency.

Formidable challenges face Rosen, one of the founding fathers of the personal computer industry, and his recently appointed president Eckhard Pfeiffer as they struggle to restore Compaq's preeminence in a market where it faces new competition from clone dealers on the low end and UNIX workstations on the high end.

Like IBM and Apple, Compaq is taking a beating in markets it once owned; like them, it will have to find new ways to adapt. Rosen, who's been a key figure in many of the industry's success stories and continues to be involved in some of its more interesting startups, is up to the task.

Todd Rundgren

Nutopia

Rundgren's been at the forefront of those finding creative uses for technology since he was a teenager, and a great one for pushing the limitations of state-of-the-art equipment. However, perhaps his most noteworthy accomplishment during 1991, in terms of its impact on the overall computer industry, was his creation of the much-MTV'd "Change Myself" video—done entirely with an affordable setup based on the Amiga and the Video Toaster. Aside from its merits as a work of art, the video serves as a vivid demonstration to every garage band in the country as to what can be done with tools within a struggling artist's budget.

W.J. Sanders III

Chairman and CEO
Advanced Micro Devices

Having finally received the legal go-ahead to manufacture and sell its AM386 microprocessors (spawning, among other things, an extremely visible ad campaign from Intel), AMD spent most of the year making up for lost time, selling lots of chips, and returning to robust profitability. At year's end in a *Business Week* interview, Sanders was gleefully anticipating deals with IBM and Compaq, who appear attracted by the higher-performance, lower-power consumption processors from AMD as components for fast workstations and notebook computers. What's next? A 486 clone, no doubt...

John Sculley

Chairman and CEO

Michael Spindler

President and COO
Apple Computer

It was the worst of times and, perhaps, the best of times for Apple in 1991. The unprecedented success of the mass-market (and low-margin) Macintosh line had an ironically dire impact on the traditionally high-margin company's revenues, and the earlier portion of the year was characterized by traumatic layoffs and losses.

But there were triumphs in the midst of trouble—in 1991, Apple's international sales passed US sales for the first time, and the release of KanjiTalk 6.0.7 spurred new interest in Macintosh in the Japanese market, where Apple went from near-obscurity to #2 in brand-name recognition after NEC. The long-awaited PowerBooks and Quadras shipped to appreciative customers. And there was, of course, the culturally amazing and technologically far-reaching alliance with IBM.

And at year's end, the Sculley-Spindler team seemed well on its way to a profitable year in which their biggest problem might be making PowerBooks fast enough.

Jonathan Seybold

President
Seybold Seminars

As the world of computer-based publishing gets bigger and more complex, so does the world of Seybold, with an ever-larger array of conferences and newsletters. "Publishing" now extends considerably beyond PageMaker and the LaserWriter—including such varied technologies as interactive fax and multimedia—and Jonathan Seybold and his staff of analysts help both newcomers and professionals make sense of a bewildering information overload, as well as providing a forum for hardware and software vendors to showcase their latest innovations for their potential customers

Richard A. Shaffer

Founder
Technologic Partners

Shaffer is one of the most notable catalyzing forces in the computer industry. Editor and publisher of the forty-times-a-year newsletter *Computer Letter*, he specializes in analyzing companies rather than their products, for the benefit of investors and others seeking to take advantage of emerging markets and opportunities. His conferences, including the annual PC Outlook gathering, are a veritable mecca for CEOs, venture capitalists, and other industry movers and shakers.

Michael Slater

Editor and Publisher
Microprocessor Report

Slater's highly regarded newsletter has become the authoritative source for information on the rapidly changing world of silicon. Says *MicroTimes* news editor Paul Hoffman in urging Slater's inclusion on this year's list: "He's becoming the most-quoted person in the biz, which suits me just fine since he knows lots and speaks concisely."

Corey Smith

President and CEO
Central Point Software

Recession? What recession? Capitalizing on the growth of the utilities market and making good use of its first infusion of venture capital, Central Point more than doubled its business in fiscal 1991 and seems well on its way to doing the same in fiscal '92.

Smith attributes this success to strong demand for the latest version of its flagship product, PC Tools 7.0, and to its efforts to expand its sales to large-volume corporate sites and the OEM channel. After only a year, these areas account for 20% of the company's worldwide revenues. With a devoted customer base of over a million users and a product line equally attractive to new users trying to get the most out of low-end PCs and to corporate system administrators, the company is rapidly becoming one of the industry's best-performing software companies.

Kieth Sorenson

President, CEO, and Chairman
RasterOps

Sorenson's aggressive leadership and strategic planning have brought RasterOps from startup to global prominance in the area of color image processing, capitalizing on the explosive 24-bit graphics and multimedia markets.

Not only did the company's profits rise to new heights in 1991, its future looks even brighter—expanding from its all-Mac origins, RasterOps now offers well-targeted display and accessory hardware aimed at the growing SPARC and MicroChannel markets, not to mention the Mac PowerBook line for artists on the move.

Robert Stein

Cofounder
The Voyager Company

Stein is the guiding force behind some of the best and most innovative multimedia products and authoring systems finding their way to market, including "The National Gallery of Art Laserguide," the Videostack (a toolkit for using HyperCard to access videodiscs), and "The CD Companion to Beethoven's Symphony No. 9." He's responsible for product development at the Santa Monica-based multimedia house, which creates some of the neatest technotools and learning products in the industry.

John Walker

Cofounder
Autodesk

Walker may have given up company management and moved to Switzerland (though, as we went to press, he had announced his intention to return to Sausalito at least temporarily as manager of technology and is expected to play a key role in the selection of a replacement for retiring CEO Alvar Green), but his influence is considerable, and not just at Autodesk. For example:

"[John Walker's] 'Autodesk: The Final Days' [is] brilliantly written and incredibly insightful. John hasn't been part of Autodesk management for three years and hasn't attended any management meetings for over two years, so he writes as an outsider questioning whether Autodesk is doing the right things. By talking about how a large company slows down, fails to invest enough and loses sight of what is important, and by using Microsoft as an example of how to do some things correctly he manages to touch on a lot of what's right and wrong with Microsoft today. Amazingly his nightmare scenario to get people to consider what's really important is Microsoft deciding to enter the CAD market—something we have no present thoughts of doing because it would stretch us too thin. Our nightmare—IBM attacking us in systems software, Novell 'defeating' us in networking and more agile, lower cost structure, custom-oriented applications, competitors getting their Windows to act together is not a scenario, but a reality."

—Bill Gates, "Challenges and Strategy," Microsoft confidential (and much-leaked) memo, May 16, 1991.

John Warnock

Chairman and Cofounder
Adobe

It's been suggested that Warnock's long-term goal is to make PostScript the lingua franca of all digital information, and he appears to be making great progress toward such a goal. The NeXT computers and their amazing graphics-and-video-handling capabilities, all based on PostScript, hint at great (and perfectly feasible) things to come, as do the constantly improving Photoshop software, the acquisition

Continued on page 85

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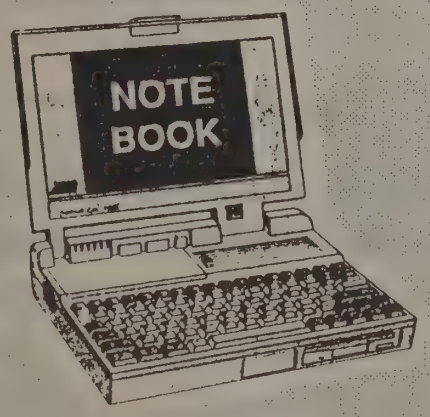

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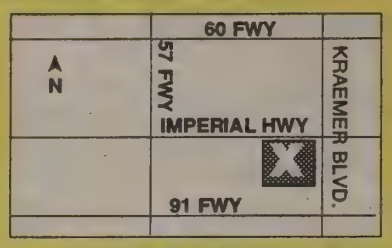

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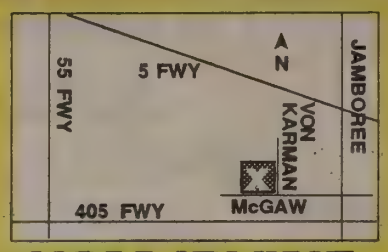

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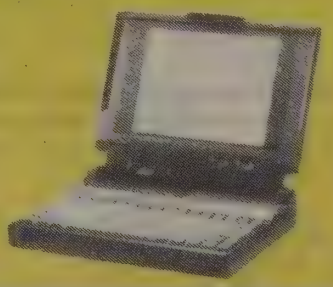

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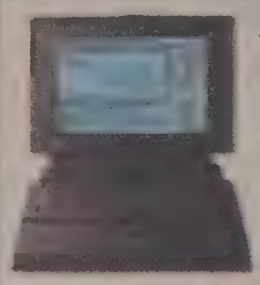

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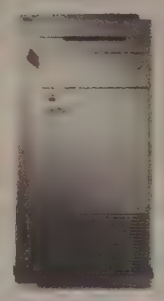

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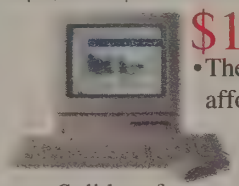

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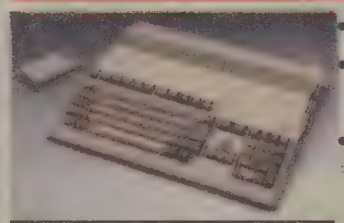

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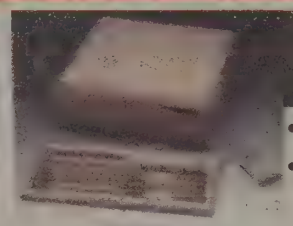

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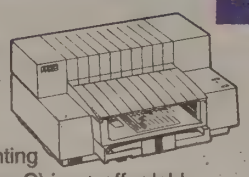
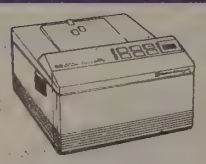


HP LaserJet IIIP

If you're looking for a Postscript laser printer for your Macintosh, we've got the Postscript LaserJet that fits on your desk and in your budget. The Hewlett-Packard LaserJet IIIP has a built-in LocalTalk interface for easy "plug & play" with any Macintosh, plus true Adobe PostScript with 35 typefaces.



HP DeskJet 500

Dot-matrix users can now afford a better image with the Hewlett-Packard DeskJet 500! It's compatible with most PC's and Amigas, offers 300-dpi high-resolution output, and comes with a 3-year warranty. Plus, its compact design fits easily on any desk.

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THE 5th ANNUAL MICROTIMES

100

Continued from page 80

of video technology from SuperMac, and most recently, Adobe's Carousel strategy (see Industry Insight, this issue) for passing documents between users on incompatible hardware and software platforms.

Jim Warren

Chairman
First Conference on Computers, Freedom & Privacy

Ask anybody who was there—this was a noteworthy and historic event and Warren, who knows a thing or two about putting conferences together, did it right. Generally speaking, the issues of computer-based crime, computers and civil liberties, and the like tend to be discussed in sectarian and highly polarized terms, resulting in a lot more heat than light. This conference was a real change—it was not unusual, for instance, for phone phreaks and system crackers to engage in philosophical discussion with district attorneys and security experts, with mutual enlightenment all around.

In an area where Geraldo-style sensationalism is typical, Warren organized diverse panel discussions and generally got people talking to each other instead of calling each other names. We hope this promising effort continues to produce useful dialogue as computer users grapple with these problems.

Robin Williams

Author

One of the most useful sources of tips, for new and veteran computer users alike, are Williams's compact, informative books, including *The Mac* and, hot off the presses, *The PC Is Not a Typewriter* and *The Little Mac Book*. She's become a real favorite in the user community for the quality of her work.

But caveat emptor. Publishing giant Que, in a sleazy move decried by all including the book's own author Neil Salkind, has released an imposter *Little Mac Book*, hoping to score a few sales at the expense of Williams. Accept no substitutes. Get the one that says "Robin Williams" on the cover.

Will Wright

Cofounder, Games Designer
Maxis

Starting with SimCity a couple of years ago, Wright has brought the art of interactive computer-based simulation to a fine art, with a myriad of add-ons for the original product and a world-builder called SimEarth. This year he went for the micro- rather than the macrocosm, shipping the innovative SimAnt, a boon to parents everywhere who don't want their children to miss the unique joys of Ant Farming but are just as happy not to have the domestic hazards of the real thing.

John Young

President and CEO
Hewlett-Packard

1990 wasn't the best of years for H-P, with the ongoing success of its LaserJet one of the few bits of good news as the venerable company strove to get back to "The H-P Way" and regain its ability to innovate

1991 clearly demonstrated that Young's doing something right, as H-P expanded far beyond its traditional markets, winning thousands of happy customers for its color printers from Macintosh users who had searched in vain for affordable Mac-generated color output. The palmtop HP95LX computer, complete with 1-2-3 on a chip, was a big hit in the portable computing market. And vendors from Sun to Apple hastened to assure prospective customers that yes, their machines would work just fine with Hewlett-Packard printers, a clear indication that they've become a standard in mixed as well as all-PC environments.

Ed Zander

President
SunSoft, Inc.

As president of the newly autonomous SunSoft, Zander's charged with creating client-server environments for the growing base of SPARC customers, a key portion of which turns out to be connectivity issues, as many of Sun's new customers want to install their SPARC machines in mixed environments, many with Intel-based hardware. So one of SunSoft's first moves has been the acquisition of Santa Monica-based Interactive Systems, a leader in porting System V.4 to the Intel-based line. A consistent environment that works across both platforms is expected to give Sun a valuable edge in selling to many corporate customers.

Pierluigi Zappacosta

President and CEO
Logitech

Zappacosta's a proven wizard at finding a market niche—in this case, input devices—and taking it over. Based in Fremont and publicly traded in Switzerland, his young, innovative company is the premier supplier of computer interface technology, from hand scanners and digitizing pads to an amazing range of mice and trackballs—not to mention a new digital camera. And in addition to one nifty gadget after another under the Logitech name, the company is also responsible for such design triumphs as the trackball in Apple's PowerBook computers. ■

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Preview

First International NeXTWORLD Expo

San Francisco Civic Auditorium
January 22–24, 1992

NeXTWORLD Expo, a combined user conference, exposition, and international developers conference, is expected to draw more than five thousand attendees to the San Francisco Civic Auditorium January 22 through 24, 1992. *NeXTWORLD* Magazine is sponsoring the product exposition and user conference, which will be held the first two days; NeXT Computer, Inc. is sponsoring the three-day international developers conference; and NOIR is sponsoring a user group meeting on January 24 only.

Steven P. Jobs, president and CEO of NeXT Computer, Inc., will open NeXTWORLD Expo on January 22 with a keynote presentation outlining future technology directions for NeXT, highlighting software strategies for the decade ahead.

Advanced registered attendance will be $25 for the exposition and keynote sessions and $95 for the full user conference. The NeXT developers conference, hosted by NeXT Computer, Inc., will cost $395 for advanced registration. Attendance at the user group conference, being held January 24, is free to registered attendees.

Those seeking more information on registering for NeXTWORLD Expo can call World Expo Corporation at (508)872-0900. Companies interested in exhibiting at the event should fax inquiries, as soon as possible, to World Expo Corporation at (508)872-8237.

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- ❑ 02 Software development
- ❑ 03 Manufacturing
- ❑ 04 Agriculture, mining, construction
- ❑ 05 Transportation
- ❑ 06 Communications
- ❑ 07 Utilities
- ❑ 08 Finance, banking, insurance
- ❑ 09 Real estate
- ❑ 10 Health, medical service
- ❑ 11 Legal
- ❑ 12 Education
- ❑ 13 Data processing, computer service
- ❑ 14 Government
- ❑ 15 Consultant
- ❑ 16 Wholesale/Distributor
- ❑ 17 Research/Development
- ❑ 18 Engineering/Architecture
- ❑ 19 Advertising
- ❑ 20 Sales/Marketing
- ❑ 21 Personnel Placement
- ❑ 22 Entertainment
- ❑ 23 Other

B. Which one category best describes your job title?
- ❑ 01 Owner, Partner, President
- ❑ 02 VP, Gen. Mgr.
- ❑ 03 Marketing Manager
- ❑ 04 Business Manager
- ❑ 05 Sales Manager
- ❑ 06 Project Manager
- ❑ 07 Data Processing Manager
- ❑ 08 MIS Director
- ❑ 09 Systems Analyst
- ❑ 10 Engineer
- ❑ 11 Educator
- ❑ 12 Bus. Microcomputer Specialist

C. How many employees does your company employee?
- ❑ 01 Over 5000
- ❑ 02 2500-4999
- ❑ 03 1000-2499
- ❑ 04 250-999
- ❑ 05 100-249
- ❑ 06 25-99
- ❑ 07 10-24
- ❑ 08 Under 10

D.What department are you in?
- ❑ 01 Accounting
- ❑ 02 Administration Management
- ❑ 03 Communications
- ❑ 04 Data Processing
- ❑ 05 EDP/MIS
- ❑ 06 Education/Training
- ❑ 07 Engineering
- ❑ 08 Finance
- ❑ 09 Marketing
- ❑ 10 Operations
- ❑ 11 Personnel
- ❑ 12 Production/Plant
- ❑ 13 Purchasing
- ❑ 14 Research & Development
- ❑ 15 Sales
- ❑ 16 Other

E. What is your department's estimated budget for computer and computer related peripherals for the next 12 months?
- ❑ 01 Over $500,000
- ❑ 02 250,000 to 499,999
- ❑ 03 100,000 to 249,999
- ❑ 04 50,000 to 99,999
- ❑ 05 25,000 to 49,999
- ❑ 06 10,000 to 24,999
- ❑ 07 Under 10,000

F. Through what channels will your department purchase its 5 computers and peripherals?
- ❑ 01 Computer Retail Store
- ❑ 02 Distributor /Wholesaler
- ❑ 03 Value Added Reseller
- ❑ 04 Consultant
- ❑ 05 Mail Order
- ❑ 06 Manufacturer
- ❑ 07 Other

G. How are you involved in your company's purchasing decisions?
- ❑ 01 I approve purchase
- ❑ 02 I specify product and vendor
- ❑ 03 My opinions influence purchase
- ❑ 04 I do not influence purchasing

H. For how many personal computers do you have this involvement?
- ❑ 01 1 to 5
- ❑ 02 6 to 10
- ❑ 03 11 to 25
- ❑ 04 26 to 50
- ❑ 05 51 to 100
- ❑ 06 100 or more

I. Does your company have personal computers?
- ❑ 01 Yes ❑ 02 No

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IB. Plan to purchase within next 12 months.

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		286
		386 SX
		386
		486
		COMPATIBLE
		AT
		286
		386 SX
		386
		486
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Best Computer Games Of 1991

BY MIKE MARKOWITZ

1991 was an exceptionally good year for computer games, marked by tremendous growth in the market for IBM PC games using 256-color VGA graphics and digitized sound. PC game programmers are still fettered by the limitations of MS-DOS, but as more and more of the installed base comes to consist of fast 32-bit CPUs, there is at least some hope that PC game software will eventually catch up to the level of graphic/animation quality that Amiga owners have enjoyed for years. Lower-cost color Macs like the LC have opened up a big new potential game market, although Apple's corporate game-phobia may still manage to stifle it.

One of the most noticeable trends, on all platforms, was the inexorable growth in the size of programs. Until quite recently, no developer would dare to publish a game that required more than two floppy disks. It is now no longer unusual for a game to take up 3MB of hard disk space. A wider use by publishers of "self-extracting archives" (compressed files that contain their own automatic unpacking routines) would help reduce the diskette duplication, packaging, and distribution costs that seem to be driving the retail prices of games higher and higher. At some point, we are going to have to make the transition to laser-optical media to accommodate all the graphics, sound, and code that realistic, engaging computer entertainment demands. But if people won't buy (or can't afford) the drives, then nobody will be able to make a profit selling the disks.

Until quite recently, no developer would dare to publish a game that required more than two floppy disks. It is now no longer unusual for a game to take up 3MB of hard disk space.

The commercial success of cartridge-based, Japanese-made, 16-bit video game machines like the Super Nintendo Entertainment System and the Sega Genesis rather paradoxically helps to expand the market for desktop computer game software. Players come to expect the same high quality of animation and sound, and publishers are able to promote the same title (and perhaps even use some of the same code) on multiple platforms.

The Mikey Awards are a highly personal and subjective selection of IBM PC and Macintosh titles of widely recognized excellence. This is not intended to disparage the excellent work that is still being done for the Amiga, the Atari ST, the Commodore 64, and even the moribund Apple IIGS. I sold my IIGS to a teacher this year, and I miss it. If Commodore sends me an Amiga, I'll be happy to review the games.

WHAT MAKES A GOOD GAME?

Criteria for evaluating computer games are no big mystery. Graphics and animation are very important. Sound, if used, should be well integrated into the design and not be annoying. The user interface should not frustrate or confuse the player. Documentation should be readable, helpful, and spelled correctly. I prefer games that are relaxing rather than frenetic, but I understand that this is definitely a minority viewpoint. The chemistry of computer gaming is based mainly on caffeine and testosterone.

The "Best of 1991" designation should not be interpreted too literally. Some of the winners may actually carry a 1990 publication date—perhaps we should call this "Great Stuff I've Seen During the Past 11 Months." The following categories have been established. (If you think a different set of categories would better represent the full range of computer games, let me know.)

Bard's Tale III

BEST TRADITIONAL (SWORD AND SORCERY) ADVENTURE GAME

Loom *(Lucasfilm Games)*

One of the few computer games to use music intelligently as an integral part of the story line.

Runner-up: Bard's Tale III *(Electronic Arts)*

Altered Destiny

BEST NON-TRADITIONAL ADVENTURE GAME

Altered Destiny *(Accolade)*

IBM PC (an Amiga version is reportedly not nearly as good)

You're a normal guy, sitting at home, when you are suddenly sucked through your TV screen into a bizarre alternative universe that only you can save. Awesome in scope, this game shows (at least in VGA) what talented computer graphic artists can do when you give them a lot of time and

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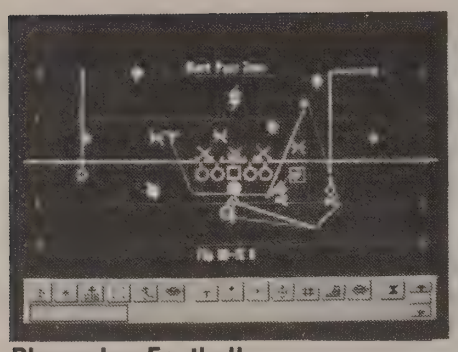
money.

Runner-up: Deja Vu II

BEST ARCADE/ACTION GAME (SHOOT-'EM-UP)

Wing Commander *(Origen Systems)*

A big hit with the hard core, this game is reportedly one of the biggest threats to the productivity of American corporate PC users.



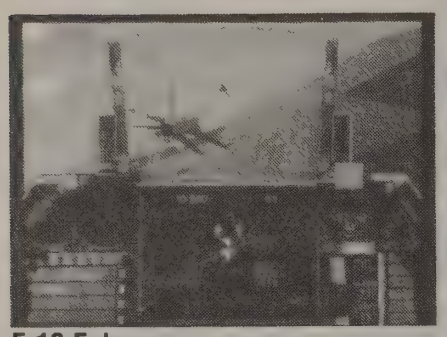
Playmaker Football

BEST SPORTS SIMULATION

Playmaker Football *(Brøderbund)*

Mac and IBM

I hate most sports games, especially football, but the overall excellence of this package almost changed my mind. Lacking the high-visibility big-name endorsements of competing programs (Joe Montana Football, Mike Ditka Football, etc.), it faces an uphill fight on the store shelves.



F-16 Falcon

BEST VEHICLE SIMULATION (FLYING OR DRIVING)

F-16 Falcon *(v3.0, Spectrum Holobyte)*

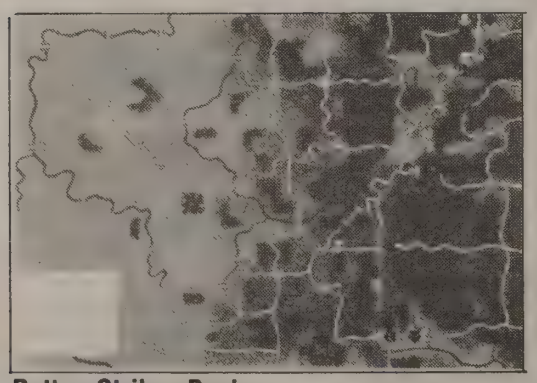
IBM PC

The much-maligned General Dynamics F-16 fighter apparently proved to be quite effective in last January's Air War against Saddam. This new version defines the current state of the art in combat flight simulation for desktop PCs. Not as realistic as a $10 million wrap-around dome simulator driven by a cluster of VAXes, but definitely more affordable. Needs plenty of CPU horsepower and a fast VGA card, but these days what doesn't?

Runner-up: 'Vette *(Spectrum Holobyte)*

Macintosh color version

Careen through the streets of San Francisco in a new red Corvette. A computer has no floor pedals and a mouse is not a steering wheel, so no Mac driving simulation can ever be entirely satisfactory, but this is the best of its breed.



Patton Strikes Back

BEST HISTORICAL/ STRATEGIC SIMULATION

Patton Strikes Back *(Brøderbund, designed by Chris Crawford)*

IBM PC

The Battle of the Bulge (December 1944) was the last gasp of Nazi military power, and the first clear demonstration that the US Army had mastered the tactics of armored combat. Every wargamer knows the details of this battle by heart, and Chris Crawford's design will not disappoint them.

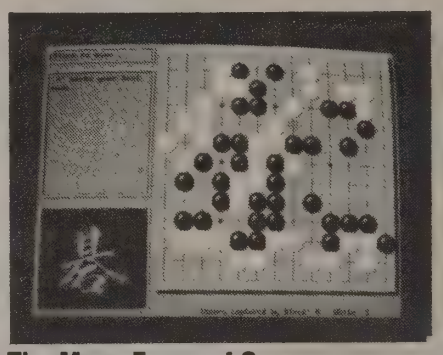
SimAnt

BEST EDUCATIONAL GAME

SimAnt *(Maxis, designed by Will Wright and Justin McCormick)*

Macintosh (IBM version coming in '92)

SimEarth, from the same design team, was a monumental achievement in simulation design, but its vast scale and complexity make it almost inaccessible to a lot of game-oriented users. The intimate, micro-scale of SimAnt and its sense of humor make it a great game, as well as a profound exploration of the dynamics of an ant colony.



The Many Faces of Go

BEST COMPUTER IMPLEMENTATION OF A CLASSIC BOARD GAME

The Many Faces of Go *(Ishi Press, designed by David Fotland)*

IBM PC

Go is an Oriental board game of great beauty and subtlety. Chess simulations are based on decades of accumulated programming experience, but this stylish, flexible, and comprehensive package is something quite unique.

BEST GRAPHICS AND ANIMATION

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Macintosh

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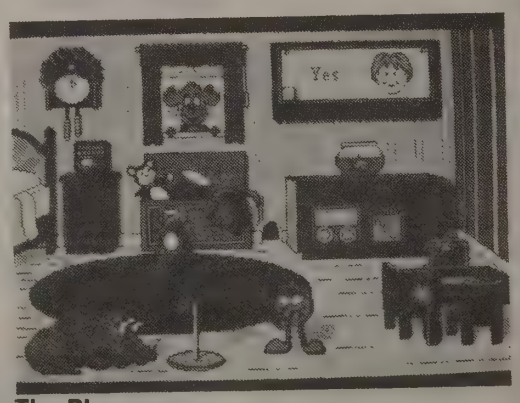
BEST NEW IDEA

The Playroom

The Treehouse *(Both designed for Brøderbund by Leslie Grimm and Lynn Kirkpatrick)*

Mac and PC



The Playroom

These two related open-ended exploration and activity packages for kids are more like software environments than narrowly focused, goal-directed "games." Particularly for the Treehouse, the scope of the design really calls for something like CD-ROM to accommodate a lot of stuff.

Runner up: Klotski *(ZH Software)*

Windows 3.0

A simple, delightful game based on ancient Polish wooden block puzzles. You can even design your own. ■

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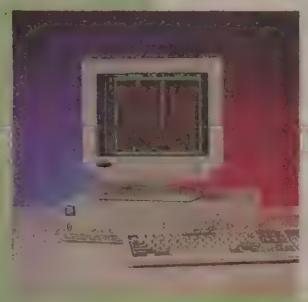

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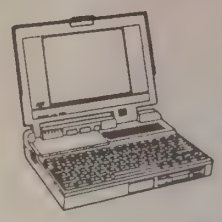

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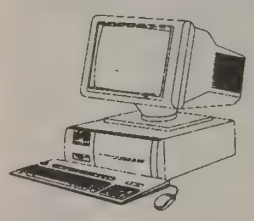

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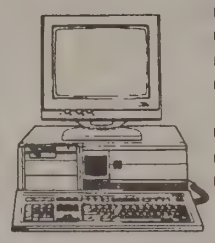

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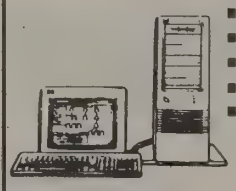

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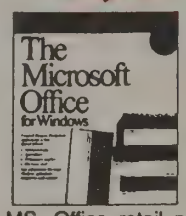

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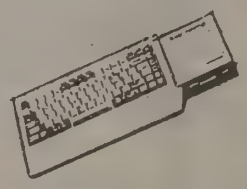

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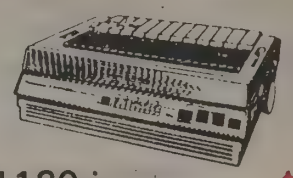

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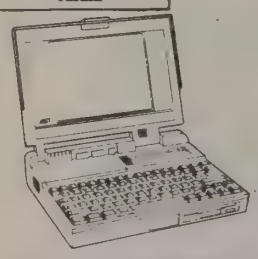

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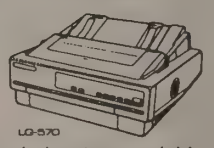

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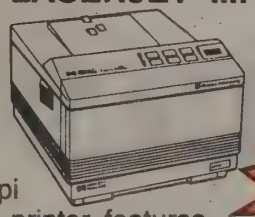

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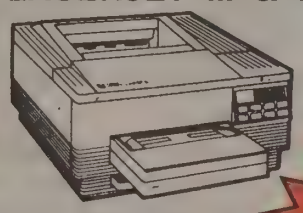

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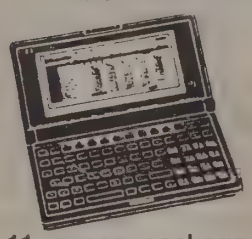

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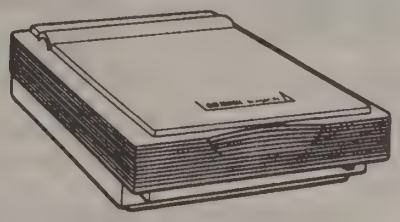

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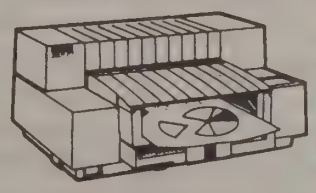

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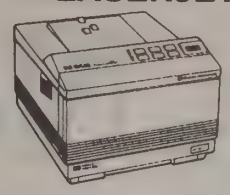

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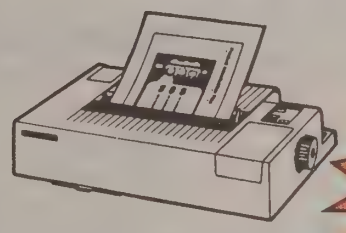

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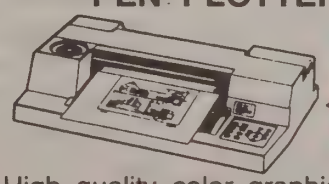

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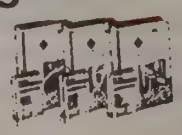

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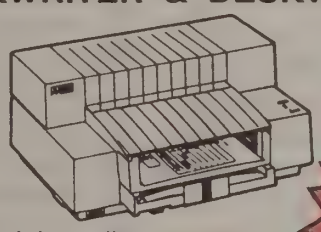

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PRODUCT SPOTLIGHT

New Products

GAME REVIEWS

By Mike Markowitz

THE TREEHOUSE

Designed By: Leslie Grimm and Lynn Kirkpatrick
Published By: Brøderbund
For: IBM PC and compatibles (640K, VGA, EGA, MCGA or Tandy graphics, mouse, joystick, and most audio cards supported). Macintosh and Apple II versions planned for Spring '92 release
List Price: $59.95

The Treehouse is certainly more than a set of games, and something less than the interactive multimedia learning environment that its marketing hype might suggest. I would describe it as a set of activities designed by people who have thought very deeply about how kids aged 6 to 10 can use computers effectively. For example, an "Even Steven" setting allows children of different grade levels to play the same game on equal terms—fairness is something really important to kids. Treehouse is the natural sequel to The Playroom (which was designed for even younger users). Treehouse is the product of a talented team of programmers, graphic artists, sound engineers, and educational consultants. These people were clearly given a lot of resources. As with some Hollywood films, you can almost smell the money.

A curriculum designer might classify the program's activities as music, biology, math, language, history, art, and logic; but to a kid, it will definitely feel like messing around and having fun. The Treehouse is a very permissive, open-ended sort of place that never locks you into an activity. This is ideal for the short attention spans of the third Television generation.

Tying the program together are male and female cartoon animals—the Awesome Possums. You can feed them, and they occasionally need to take naps. The Treehouse is full of surprises. Click on a cloud and it changes shape. Drop a nut and a squirrel runs out to pick it up. Clicking on certain objects transports you into an activity—for example, the keyboard sends you to the music activities, and the game board sends you to the Road Rally, an arithmetic game in which you plan your path to collect the greatest number of tokens.

Continued on page 99

PRODUCT UPDATES

➤**Aldus** released **PageMaker for the Macintosh v4.2**. Registered owners of PageMaker 4.0 or 4.1 may upgrade for $85, including a copy of PrePrint 1.5. Other registered owners may upgrade for $150. Aldus Corp., 1-800-367-1892.

➤**Farallon Computing** released **Timbuktu/Remote 3.0**. This screen-sharing and file transfer software now features color screen sharing over modems, autoscrolling, and simplified password capabilities. Farallon Computing, Inc., (510)596-9000.

➤**hDC Computer** released **IconDesigner 2.0**, a design studio for creating or modifying icons in Windows. The upgrade price for registered users is $14.95. hDC Computer Corp., 6742 185th Ave. N.E., Redmond, WA 98052. (206)885-5550.

➤Each new package of **Microsoft Works** will include a free coupon for **Intuit Quicken 3.0**. Although Quicken is offered at no charge, users will be responsible for the $5.50 shipping and handling cost. This offer will be available through January 31, 1992. Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399. (206)882-8080.

➤**Super PC-Kwik**, the disk caching program from **Multisoft Corp.**, will be included in **DR DOS 6.0**. Multisoft Corp., 15100 S.W. Koll Pkwy., Suite L, Beaverton, OR 97006. (503)644-5644.

➤**Parsons Technology's Resident Expert for all versions of DOS**, the online hypertext format program linking keywords for instant access to information on topics or subtopics, now includes MS-DOS 5.0 commands. Parsons Technology, Inc., One Parsons Dr., PO Box 100, Hiawatha, IA 52233-0100. (319)395-9626.

➤**Practical Peripherals** will include **CheckFree** bill payment software and one free month of free service with all new modem purchases. Regular CheckFree service is $9.95 per month for up to twenty payments and $3.50 per additional ten payments, or any portion thereof. Practical Peripherals, Inc., 31245 La Baya Dr., Westlake Village, CA 91362. (818)706-0333.

➤**Qualitas** announced new versions of **386MAX v6** and **BlueMAX v6**, its DOS memory management utilities. Owners of earlier versions may upgrade for $29.95. Qualitas, Inc., 7101 Wisconsin Ave., Suite 1386, Bethesda, MD 20814. (301)907-6700.

➤**Toshiba** is offering a **free MS-DOS 5.0 upgrade** for owners who purchased any Toshiba portable computer on or after September 1, 1991. Customers who purchased their portables prior to September 1, 1991, or after November 30, 1991, may buy an MS-DOS upgrade kit for $49.99. This program is effective through March 31, 1992. Toshiba America, Inc., 1-800-441-5503.

➤**Triticom** released enhancements to its entire line of its **LANVision Traffic Monitor Software—EtherVision 2.1**, **TokenVision 2.1**, and **ArcVision 2.1**. Triticom, Inc., Box 444180, Eden Prairie, MN 55344. (617)937-0772.

➤**WordTech** is shipping **VP-Expert 3.0**, the latest version of its rule-based expert system development tool. Existing users can upgrade for $129. WordTech Systems, Inc., 21 Altarinda Rd., Orinda, CA 94563. (510)254-0900.

➤**XTreeGold v2.5**, by **XTree Co.**, includes thirteen graphic file viewers, new time-saving command options, and other usability enhancements. XTreeGold users who acquired their software, or upgraded from a previous version, on or after July 15, 1991, will receive an upgrade free. Other XTreeGold 2.0 users can upgrade for $19.95 plus $4.95 shipping and handling. Owners of any XTree product can upgrade for $39.95 plus $4.95 shipping and handling. XTree Co., 4330 Santa Fe Rd., San Luis Obispo, CA 93401. 1-800-282-5003, ext. 990.

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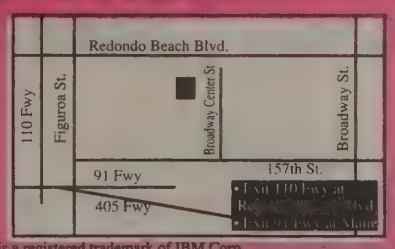

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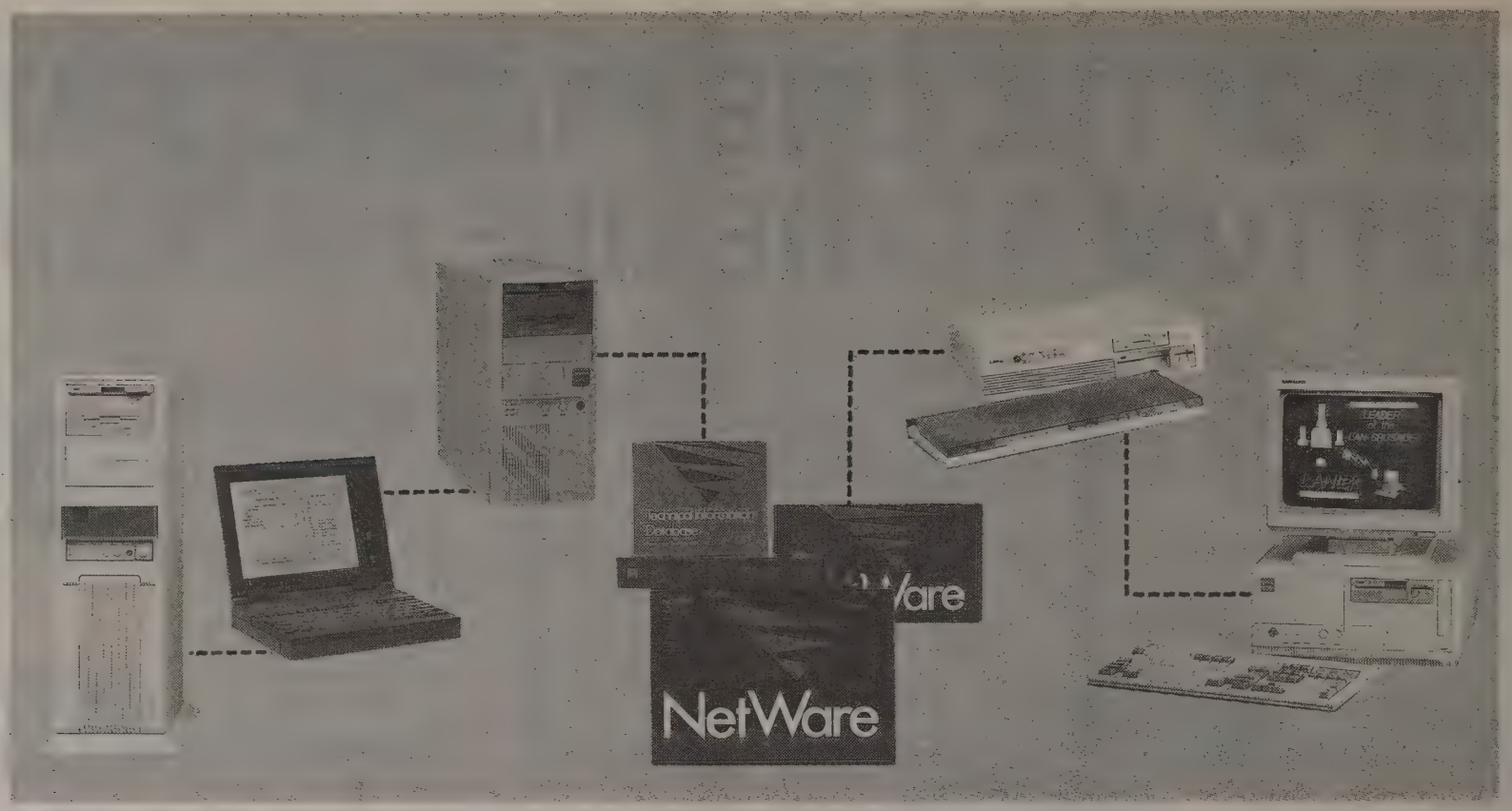

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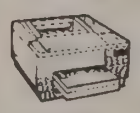

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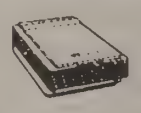

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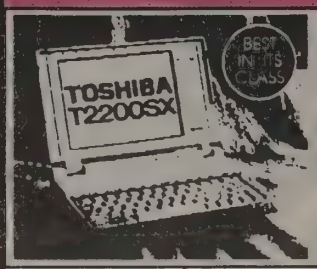

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PRODUCT SPOTLIGHT

Continued from page 94

I particularly liked the Treehouse Theater, where you construct pictures by building pattern sentences from different parts of speech: "who," "does what," "where," and "when." You can then drag additional "props" into the picture to customize it.

In some activities you win "prizes," like floating balloons that accompany you back to the Treehouse. They seem to become permanent fixtures—I can't figure out how to get rid of them.

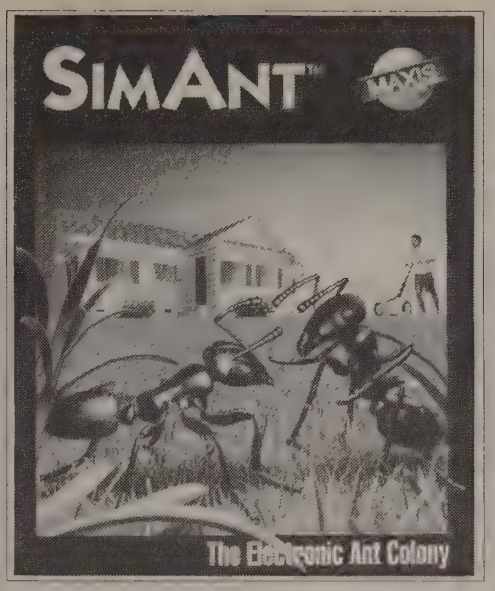
Although the program can be controlled with mouse, joystick, or keyboard, I found using the keyboard to be excruciatingly awkward. Digitized sound and music are an important part of the program (in the program's directory listing, the file DIGISND.DAT takes up 1,113,437 bytes!). Since the built-in sound on most (non-Tandy) PCs is so pathetic, an audio card is highly recommended. The program supports the Sound Blaster, AdLib, Disney Sound Source, Covox Sound Master, and similar devices.

The package includes three high-density (1.2MB) and five 3.5" (720K) disks. There is also a short audio cassette tape of the program's theme song. Documentation includes a 68-page program guide (oriented toward teachers and parents) and a 32-page Kids Guide and Songbook. When installed, the program takes up about 3MB of hard disk space.

For users with appropriate hardware (VGA graphics, mouse, and a sound card), The Treehouse represents the current state of the art in positive, non-violent software for the 6–10 age group. The Macintosh version will support sound recording on systems that include a microphone. The Apple II version, constrained to the limits of 128K, will have fewer features and activities.

SIMANT

Designed By: Will Wright and Justin McCormick
Published By: Maxis
For: Macintosh (1MB monochrome, 2MB color), IBM and Amiga versions to be released in late 1991
List Price: $59.95



Since the first caveman pondered the mysteries of the beehive while trying to steal honey without getting lethally stung, the "social" insects have been a great source of inspiration and metaphor for thinking about societies in general. Evolution has given the social insects many advantages we lack—they communicate with swift and precise chemical signals while we have only halting, ambiguous language. Their behavior is guided by finely honed instincts, while we stumble along with feeble reasoning and ill-adapted emotions.

The ant farm is a staple of elementary school biology and stand-up comedy. Sandwiched between plates of glass, any limited artificial environment can only teach limited and artificial lessons. Software, on the other hand, is constrained only by the limits of RAM, CPU cycles, and imagination. The team that created the wonderful software toys, SimCity and SimEarth, has now given us an electronic ant farm, with a limitless supply of virtual insects that can never escape from the computer to ravage your kitchen.

We evaluated a late beta-test version of the software. Once a few INIT conflicts were resolved, it ran without problems on a Mac LC, a IIsi, and a IIci. The color version runs much faster in 16-color mode, so if your monitor's control panel is set for a higher number, the program gently reminds you to change it. The final release includes two disks with separate color and monochrome ver-

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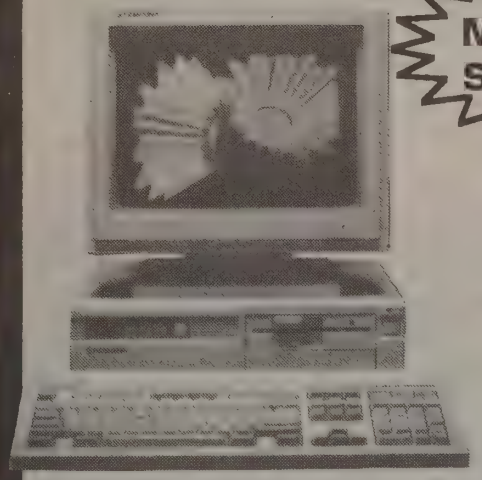

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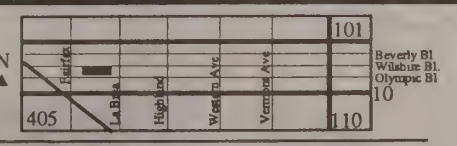

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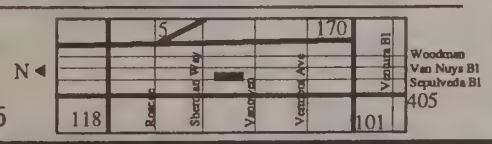


sions of the program. The color version came as a self-extracting CompactPro archive and took up 1100K of disk space after installation.

SimAnt can be played on several different levels. An interactive Tutorial walks you through the mechanics of a Quick Game: digging tunnels, foraging for food, and doing battle with the evil empire of the Red ants across the yard. In the Full Game you start with one Black colony and one Red colony and your goal is to establish control over the entire yard and the adjoining house.

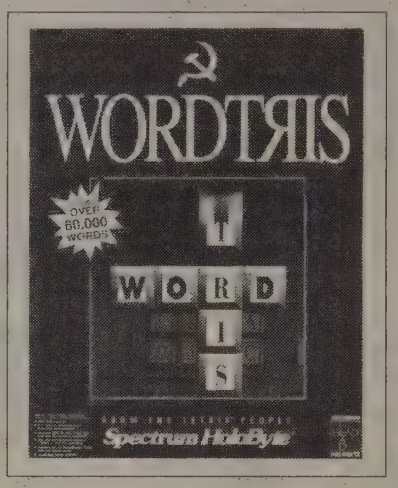
You can view events from the micro-level perspective of a single ant inside the nest, or zoom out to increasingly expansive overhead views of your local patch or the entire yard. The game controls are graphic and intuitive—for example the Behavior Control window lets you allocate relative efforts of your colony between foraging, digging, and breeding.

The game presents a lot of solid scientific information while retaining a sense of humor. Users who are squeamish about insects may find some of the graphics, well, a little too graphic. The game has extensive online Help to explain its many features. A HyperCard-based reference system provides lots of information about ants. The illustrated 175-page manual is excellent.

I couldn't help wondering whether the program has hooks for add-on modules like SimBee or SimTermite. SimAnt may do for entomology what SimCity did for urban planning.

WORDTRIS

Designed By: Sergei L. Utkin and Vjacheslav A. Tsoy
Published By: Spectrum Holobyte
For: IBM PC compatibles (640K, CGA, Hercules, EGA, or VGA graphics, supports popular sound cards)
List Price: $44.95



Just when you thought there was no way to do another game based on blocks falling into a well, Wordtris arrives, fresh from the falling Soviet empire. Wordtris was born of the unnatural union of Welltris with a spell checker.

Each falling block is stamped with a letter, and as they fall you have to shift them left or right, attempting to form words. The well is half filled with water, and the blocks float until other blocks push them under the surface. As soon as the program recognizes a formed word, it disappears, and you score points, based on the length and difficulty of the word. If you manage to form a "magic" word, the whole well is emptied. An "eraser" block falling randomly lets you zap a letter that may be particularly out of place. Letters with a question mark are "wild cards" that become any letter you type before they hit bottom.

Wordtris has a sixty-thousand-word dictionary and

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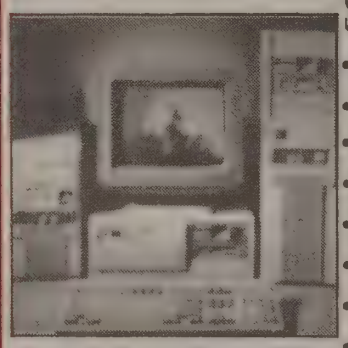

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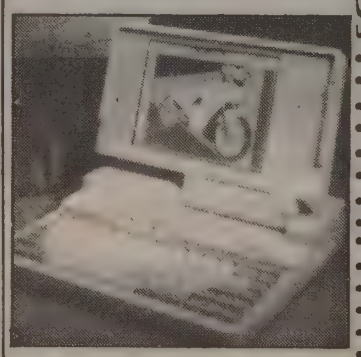

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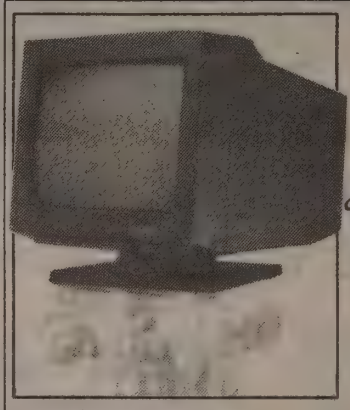

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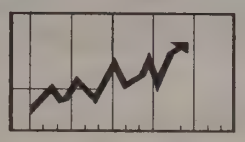

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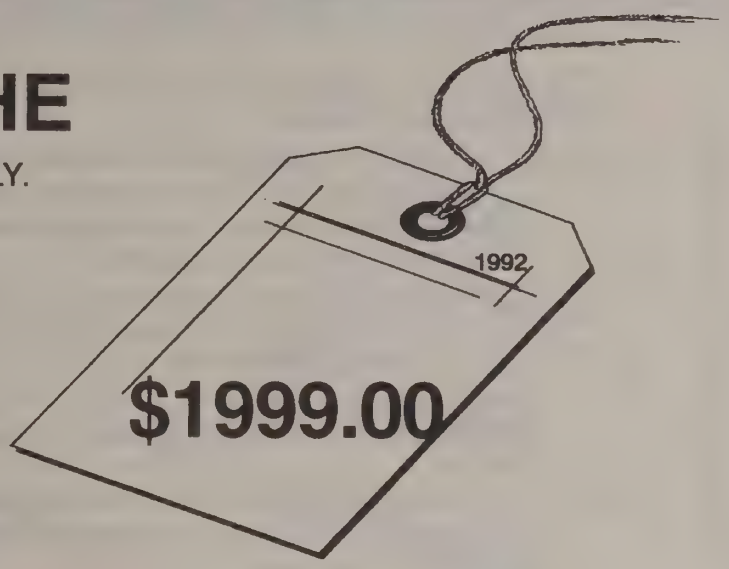

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very fast recognition algorithms. Performance was very good on a 12MHz 286. You can even add one thousand words of your own to the dictionary.

Since this is a fairly difficult game, there is a "children's mode" that makes the letters fall

very

very

slowly.

There is also a sneak preview option that shows you the next letter that will fall.

I recommend setting the minimum word length to four letters—it's annoying to have the program constantly removing obscure three-letter words when you are trying to build something more impressive.

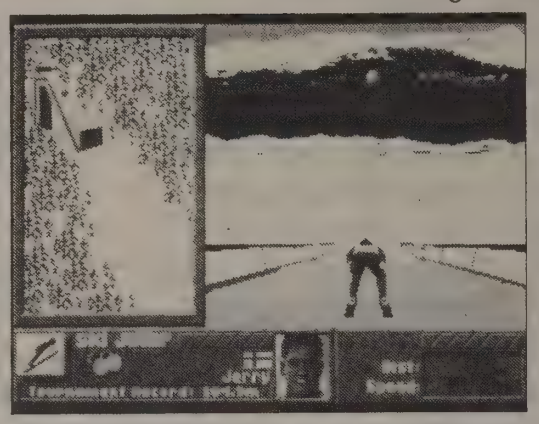
The package contains a 26-page manual, two 720K and three 360K disks. Some very poorly written on-screen installer instructions might confuse a beginner, but the game's options and controls are easy to use. You need to use the manual to identify a quotation before the game will run.

With two computers and two copies of the game, you can play against an opponent over a serial cable, modem link, or Novell network (!).

Wordtris is a well-crafted game that should appeal to gamers who enjoyed its predecessors, Tetris, Welltris, and Faces, and to those who love crossword puzzles, Scrabble, and similar word games.

THE GAMES: WINTER CHALLENGE

Designed By: Jeff Sember and Mike Benna
Published By: Accolade
For: IBM PC and compatibles (640K, VGA or EGA graphics, 10MHz or faster 286 CPU recommended, supports AdLib, Sound Blaster, Roland MT-32 and LAPC-1 audio cards). Sega Genesis version coming in Spring 1992
List Price: $54.95



The name and logo of the Olympic Games are trademarks jealously protected by the greedy Eurotrash who control the International Olympic Committee. No software company can afford the IOC's licensing fees, so we will probably never see an official Olympic computer game. Accolade's new simulation of the Winter Olympics is simply called The Games: Winter Challenge. It offers impressive animation and sound effects for the bobsled, luge, cross-

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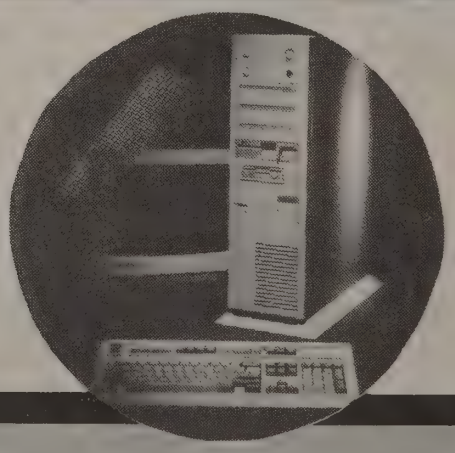

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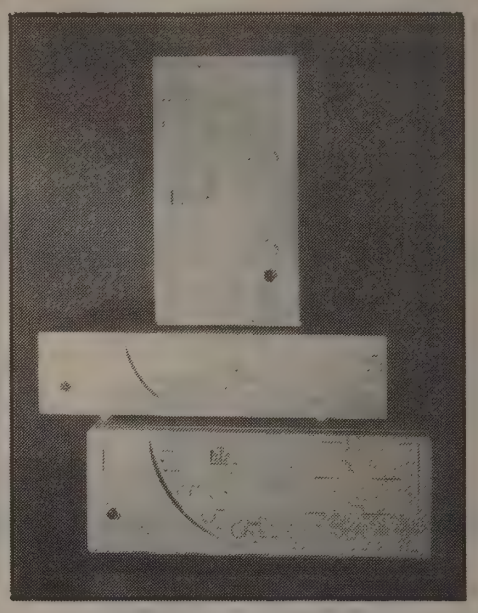

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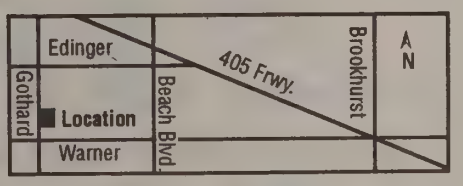

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country skiing, speed skating, the ski jump, giant slalom, downhill ski race, and biathlon.

The package includes an illustrated 40-page manual, a quick reference card, a cardboard code wheel, and one 5.25" high-density disk. The 3.5" disks can be special-ordered for an additional $5.00, and for $10 Accolade will exchange the program disk for a set of 5.25" 360K floppies.

The program's installation can be customized in several ways. A Fast Load option takes twice as much hard disk space, but gets the program up and running faster. With Fast Load selected, the VGA version takes up 1.4MB. On slower CPU's you can opt for a lower level of graphic detail to speed up the action. Winter Challenge can be run from Windows 3.0 if you have at least 513K of application memory free, and the program comes with a nice Windows icon for the Program Manager.

Your digital athletes can be controlled with a joystick or the numeric keypad. The simplest controls are for the luge: Start, Steer Left, and Steer Right. The most complex event is probably the biathlon, which combines target shooting with cross-country skiing.

The screen is divided into three panels—an overhead map view of the course, a status bar across the bottom, and a spectacular animation window as seen from the perspective of the athlete. The graphics are a slick combination of polygon-fill objects and bit-map backgrounds.

The mouse can be used only for selecting game options. There is a training mode for practice, and a tournament mode for multiplayer competition. There is even an Instant Replay function, so you can relive Great Moments.

The Games: Winter Challenge has enough variety to provide many hours of entertainment. I liked it, and I hate snow. ■

PC SOFTWARE REVIEW

MAGAZINE RACK CD-ROM DATABASE

Published By: Information Access Co.
List Price: $89.95
Reviewed By: Woody Liswood

The Magazine Rack CD-ROM is a literature database that will save you time and money searching for the information you need. It is a compilation of about 369 magazines and their articles during 1990. Although the index covers articles back through January 1989, Gary Ellis, from Information Access, said that there were only a few articles from 1989, and mostly from the second half of the year.

The Folio Reviews v2.0 search-and-retrieval software works reasonably well using a pull-down menu system. It

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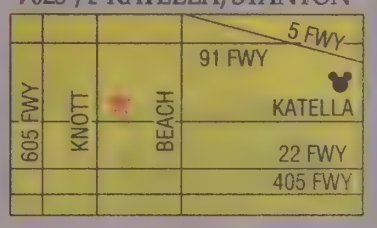

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is also mouse driven, but you must be exactly on the start of an item for your mouse clicks to work. I found that the Folio interface was not as intuitive as other CD-ROMS that I have used. However, after a few minutes I felt comfortable using it.

To perform a search, you pick a general area—Business, Computers, General, or Health are areas displayed on the main menu. There are three additional databases on the disk; one has information about Magazine Rack, one is a computer dictionary and glossary of terms, and one contains a list of the magazines and publishing information contained in the databases. You cannot access all of the databases at once. Each is indexed separately.

From the pull-down menu structure you can get to files, edit data, perform searches, and change options within Folio. From the query system, you can search by keywords, topics, company names, dates, products, article types, magazine names, authors, or even for specific text within the articles. For example, under Publisher Information there are 230 listings for Business, seventy for Health, and thirteen for Computer.

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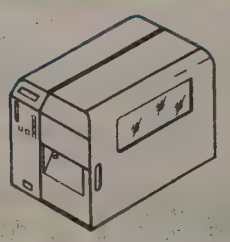

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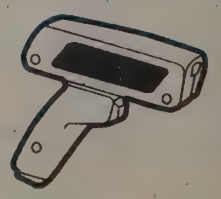

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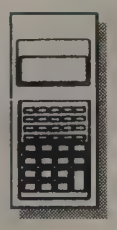

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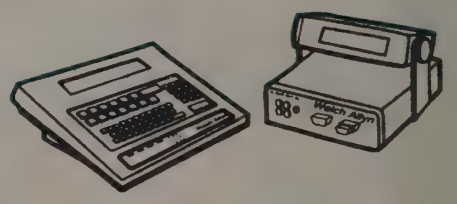

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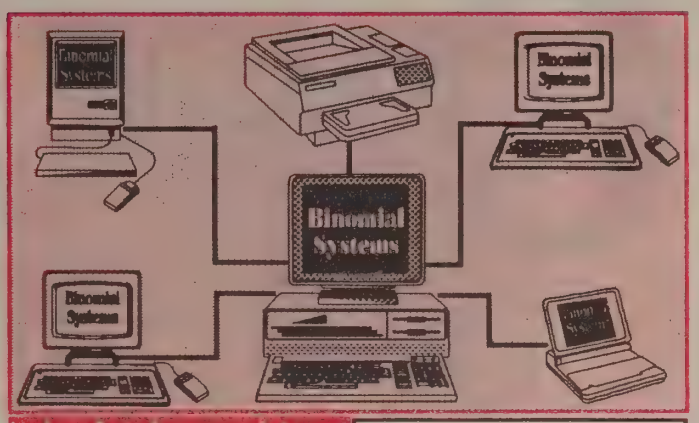

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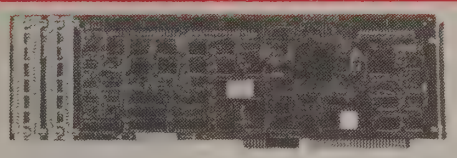

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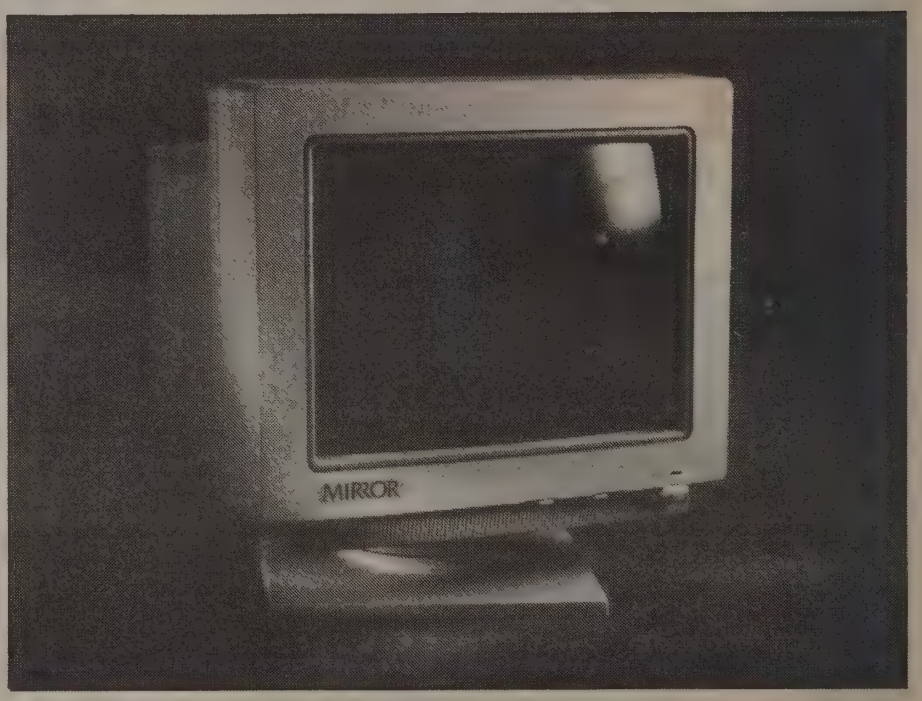
Just Because That Quadra's Out Of Your Reach, Multimedia Doesn't Have To Be...

BY TONY REVEAUX

The Mac still remains the favored platform for desktop publishing, graphics, music, and multimedia. To fully use this wide range of sophisticated applications, the first choice of professionals is usually a Macintosh IIfx or Quadra, with 8MB of RAM and a color display, 19" or larger.

Because of the easy-to-use consistency of the Mac graphic user interface, and the greater availability of entry- and intermediate-level programs, more and more Mac users want to be able to include graphics, DTP, and multimedia as part of their regular work. Few of them can justify the investment in the heavy-duty desktop hardware of the full-time professional.



CONFIGURATION STRATEGIES

For those of you who already have, or are planning to buy, a Mac LC, ci, IIx, IIcx, or IIsi, here is an approach to upgrading your box's graphics capability without winning the lottery. Adding a graphics accelerator card that supports a hardware-based Virtual Desktop, coupled with a low-cost 13" or 14" color monitor, can make the difference between a struggle and a streak in your publishing and presentation work.

There are different kinds of accelerator boards with different working goals. For overall performance, the ideal choice, of course, is a higher-level model of Mac—when you can afford it. Systems accelerator boards like the Radius Rocket and Fusion Data Systems' Tokomacs can lift off your 68030 system into the 68040 orbit of the Quadras. Adding a floating-point or math coprocessor chip or board will increase your number-crunching muscle. Apple offers a $3000 upgrade board for a Mac II or IIx that will reincarnate it into a IIfx. A comprehensive upgrade is like leap-frogging your Mac into the next machine generation. Today's Quadra will be tomorrow's Qlassic.

When your upgrade goal is the enhancement of graphics operations, your first decision will be to choose between an 8-bit or an 8/24-bit environment of resolution. There are many good 8-bit graphics accelerator boards available for under $600. If you add one of these components to a Mac LC, ci, or si—computers which already include on-board 8-bit video for small screens—you will be increasing their performance power. If you add an 8/24-bit board, you will be expanding the range of resolution as well as the performance.

For presentations and multimedia, most of your finished documents will usually end up being at 8 bits. Though 24-bit images can have a richer depth of detail and smoother resolution, they are more memory-intensive and their elements are slower to display, animate, and move. If your goal is electronic publishing, then you probably already know that you want to be able to work in 24 bits (and 32 bits, with software programs that employ the extra 8-bit alpha channel, which provides 256 levels of transparency). With 24 bits, you can take full advantage of the powers of programs such as Adobe Photoshop, Letraset ColorStudio and QuarkXPress, and perform photo retouching and color prepress layout.

But even for multimedia, a 24-bit environment can be an advantage. Many producers will create elements within a 24-bit program because they can exert much more control on detail and color, especially with elements that have been scanned in, like photos and sketches. Then they can downsize the 24-bit documents to 8 bits. The new document may retain much of the quality of the original one, even though coarsened in a lower resolution.

With the arrival of Apple's QuickTime, a new photo, animation, and video compression and playback utility due by next quarter, desktop video will become more common, and you may find yourself creating multimedia documents to be played in QuickTime. A 24-bit environment may be more flexible for that kind of work.

RESOURCES:

Spectrum/8%24 PDQ, $1399
SuperMac Technology
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Mirror 14" Color Display, $399
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There's another advantage to an 8/24-bit environment. It can give you an application-independent Virtual Desktop, providing the equivalent of a larger-area monitor. SuperMac's Spectrum/8%24 PDQ (about $1100 street), with its SuperVideo 2.2 software, has hardware-based pan and 2X zoom and can generate a workspace larger than the 1:1 size of the monitor. I have been using an 8%24 PDQ in a Macintosh IIcx with 8MB of RAM, with a Mirror 14" Color Display ($399 direct). The Mirror has a resolution of 640 x 480 pixels, the same as Apple's RGB 13" monitor ($750 street), a solid performer. The size of the Spectrum/8%24 PDQ's Virtual Desktop starts at the 1:1 size of 640 x 480 pixels, and can then be expanded in six steps: 832 x 624, 1024 x 768, 1024 x 1536, 2048 x 1536, and 4096 x 1536. These are proportional equivalencies to other display areas.

There is a tradeoff, though. The larger the area, the fewer colors or shades of gray you can employ. So, at the largest area of 4096 x 1536, you can only realize that full eight square feet of space in the 2-bit black-and-white mode. As in the zoom-in mode, you can move around the big desktop simply by panning or moving your cursor to the edge of the screen. Because of the powerful graphic acceleration of the 8%24 PDQ, it moves instantly, without a jerk, blur, or jitter. It is so easy to move back and forth between these different ratios of resolution and size that it's possible to manage large documents on a small monitor, using the larger screens for layout and the smaller ones for editing and detail.

With SuperMac's 8%24 PDQ accelerator, it is so easy to move back and forth between different ratios of resolution and size that it's possible to manage large documents on a small monitor, using the larger screens for layout and the smaller ones for editing and detail.

A graphics accelerator board such as the 8%24 PDQ has custom ASICs (Application-Specific Integrated Circuits) that include a NuBus controller that moves data from the NuBus onto the graphics card as fast as possible. The NuBus is slow, and has remained a major bottleneck for the kinds of data that draw and redraw QuickDraw graphics primitives. Here, QuickDraw is accelerated at two different levels—at the high-level QuickDraw commands such as polygon movement and color specifications, and also at the low-level commands like bit-blits, the movement of one block of pixels from one place to another. The scrolling of text, and the scrolling and redrawing of a document such as a spreadsheet, happens in real time.

I find that with the board's acceleration on, even word processing activities have more snap, crackle, and pop. Working with Adobe Photoshop, 24-bit full-color images open faster and smoother—like a curtain dropping—and when I move the image around on the page, it holds it off-screen and then snaps fully open when the mouse button is released. Effects such as the special filters are much faster, many almost instantaneous. With applications like MacroMind Director 3.0, some functions respond better to acceleration than others, depending upon the program's internal routines for parceling out its "frames" of data, as determined by the document's continuity.

THE VALUE OF ACCELERATION

How important is the extra speed gained with an accelerator? Some actions will have an almost imperceptible speed increase, while others are dramatically quicker. But it's not the individual flash of pixels that's important so much as the cumulative savings of time accrued over the course of an operation, or in a project for processor-intensive applications such as DTP and graphics. Efficiency aside, perhaps the most important advantage in acceleration here is the more direct, real-time response to your actions that can help make your work a more intuitive experience.

When you're working in image-intensive areas such as graphics and DTP, you should try to get the largest color monitor you can afford. Many color monitors of 21" and above have resolutions of 72dpi (dots per inch) or even 80dpi for some grayscale full-page displays. It helps to be able to see the entire document at once when you're designing and editing projects. With complex applications like QuarkXPress and MacroMind Director, a large screen allows you to place and display all the different palettes at once without having to stack them.

For presentations and multimedia, most of your finished documents will usually end up being at 8 bits. Though 24-bit images can have a richer depth of detail and smoother resolution, they are more memory-intensive and their elements are slower to display, animate, and move.

That said, it simply may not be possible for you to afford one of these monitors when some tubes can cost as much as a used Buick. Prices are coming down, as with many other computer components. I've seen SuperMac 19" SuperMatch displays with prices lowered to as little as $2000, and 21" SuperMatches for $2400. That still may understandably be too high a tab for your current workstation resources. That's why a small color monitor and a graphics accelerator board may be a viable strategy for you at this time. You may be able to add a larger display further on down the road.

I have found this Mirror 14" more than adequate. When pushed into the 32-bit mode by the SuperMac accelerator, pixel-by-pixel editing in Photoshop was not noticeably hampered, any more than it was when I've used a 21" SuperMatch or a Mirror ProView 20. There are many ways you can plan your acquisition strategies to build a wizard of a Macintosh graphics workstation, depending upon the components you already have and those you can afford to get. ■

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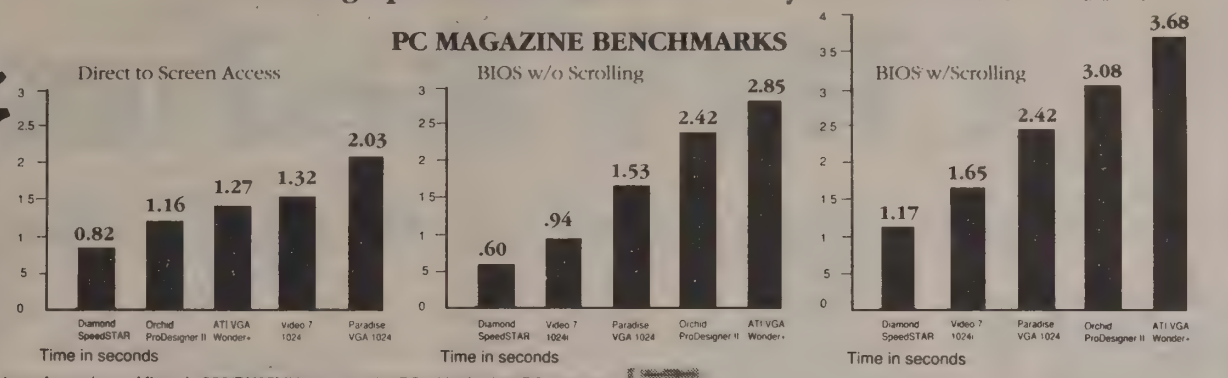
PC MAGAZINE BENCHMARKS



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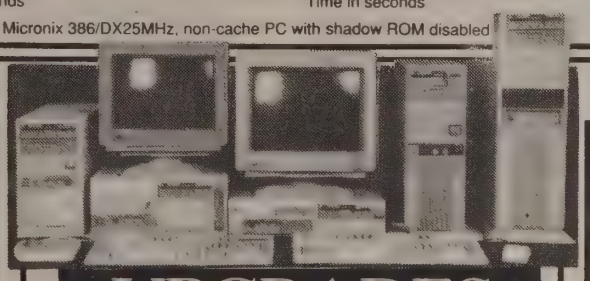

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CDTV Redux

Some Good Titles, Lots Of Unrealized Potential

BY MATTHEW LEEDS

It's been over a year since Commodore rolled out the CDTV. In that time they reduced the price by $200 and added new technology—CDXL simulated video, Picture-In-Picture (PIP), and compatibility with Kodak's Photo CD system. The CDTV system was named among the most innovative consumer electronics products at the 1991 Summer Consumer Electronics Show.

I've finally had a chance to use a CDTV system and a selection of software for an extended period of time. After two months of use I've still not decided if the CDTV system will be Commodore's C64 or Plus4. On the one hand it offers tremendous technology with an expandable hardware base, and optional access to a large software base. On the other hand, only a few CD-ROM based CDTV software titles are available, and many of those are not worthwhile. Commodore has released an upgrade kit for CDTV that includes a keyboard, mouse, and floppy drive for under $300. This signals that the company has finally given up on the myopic marketing position that denied CDTV was a computer.

AMIGA

All indications are that Commodore will license technology from Digital Creations and produce a DCTV display card to be included in a new version of the CDTV. That version may also offer support for v2.0 of the Amiga's operating system. DCTV technology would boost CDTV's display capability to around two million colors, but would also complicate development of titles, as many developers are not familiar with some of the constraints that DCTV operates under. It appears that the DCTV technology will also be required if Commodore is to make good on its commitment to support Kodak's Photo CD system.

SOFTWARE CHOICES

Commodore has now added a new free CDTV title to the package. **Lemmings** from Psygnosis is one of the most addictive games released in recent times. I've not noticed any changes in the CDTV version from the floppy version, but a demonstration of what appears to be a new flight simulator is also included on the disc. **Planetside** features multiplane scrolling graphics, a very high frame rate, and what appears to be fractal generated mountains. The demo is noninteractive and streams data off the CD during playback.

Copyright © 1991. All rights reserved. *Matthew Leeds has been involved in the high-tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

Dominion Software produced **Advanced Military Systems**, a sort of database with information on military hardware and weapons systems. The package lets you bring up info on specific systems; the info includes several scanned photos, a narration with a musical background, and brief specifications on the system. The photos are generally of poor quality, with a distinctly greenish cast. While the presentation is a step above the text-only databases typical of MS-DOS CD-ROM products, the lack of any indexing, any print output capability, or any text export capability all detract from the utility of the package, as does the poor quality of the narration.

Animated Pixels produced **The Illustrated Works of Shakespeare.** This is also essentially a database product, but a much better execution. While it still lacks any print output or text export capability, it does have an index and a search function. (This points up one of the major defects in not including a keyboard with the CDTV. Entering text using the remote control is a slow and tedious process. None of the products I looked at offered a good solution to this problem. Selecting a single letter of the alphabet at a time from an alphabetical grid on-screen via the arrow keys on the remote is no fun at all. If you make a mistake in selecting a letter, you must then select the delete button.) The "Illustrated" part of the title refers to the pen-and-ink style illustrations that accompany the text.

Two products from Xiphias offer yet another perspective on the database product approach. **The Time Table of History: Science and Innovation** includes over six thousand stories covering key events in science, from the "Big Bang" to the latest (1991) headlines. The interface is the most interesting I've seen so far. The search engine provides a reasonable response time, and the cursor is changed to show that a search is in progress. The stories are extremely brief, sort of a *USA Today* approach to news. There is a full index—every word in every story is indexed, which turns out to be both a blessing and a curse. The stories are in some cases enhanced by the linkage of historical photographs, illustrations, and sound bites.

The American Heritage Illustrated Encyclopedic Dictionary uses the same interface. It provides definitions for over eighty thousand words and will pronounce each word on demand. In addition, there

After two months of use, I've still not decided if the CDTV system will be Commodore's C64 or Plus4. It offers tremendous technology with an expandable hardware base, and optional access to a large software base. On the other hand, only a few CD-ROM based CDTV software titles are available, and many of those are not worthwhile.

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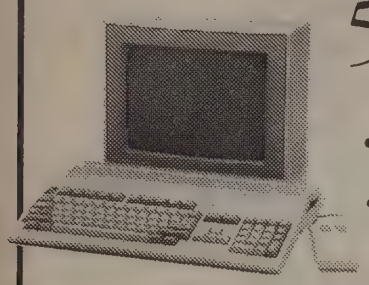

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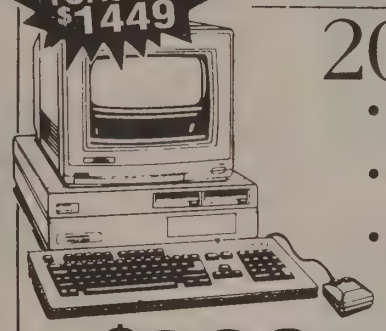

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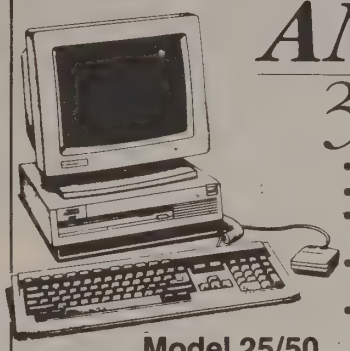

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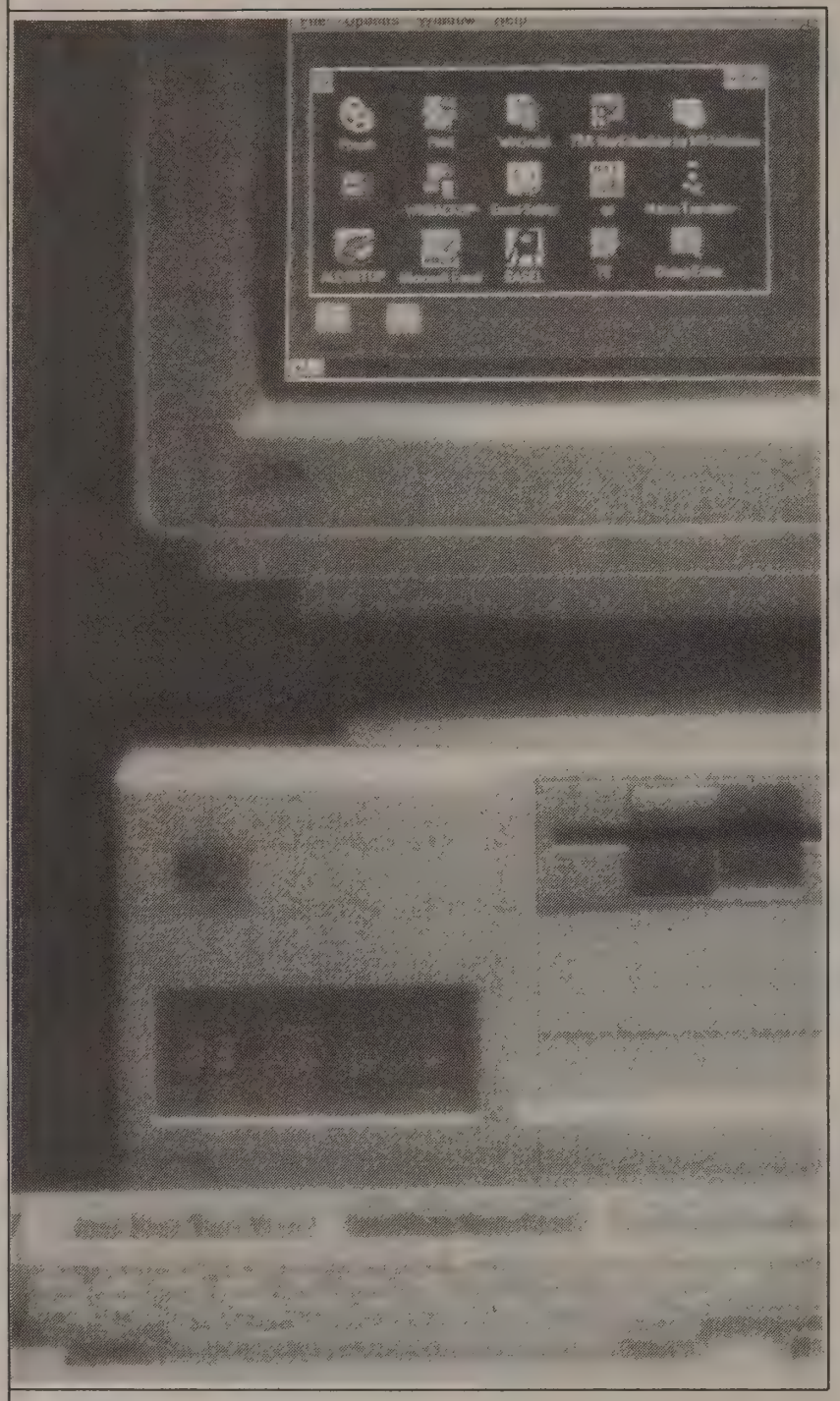

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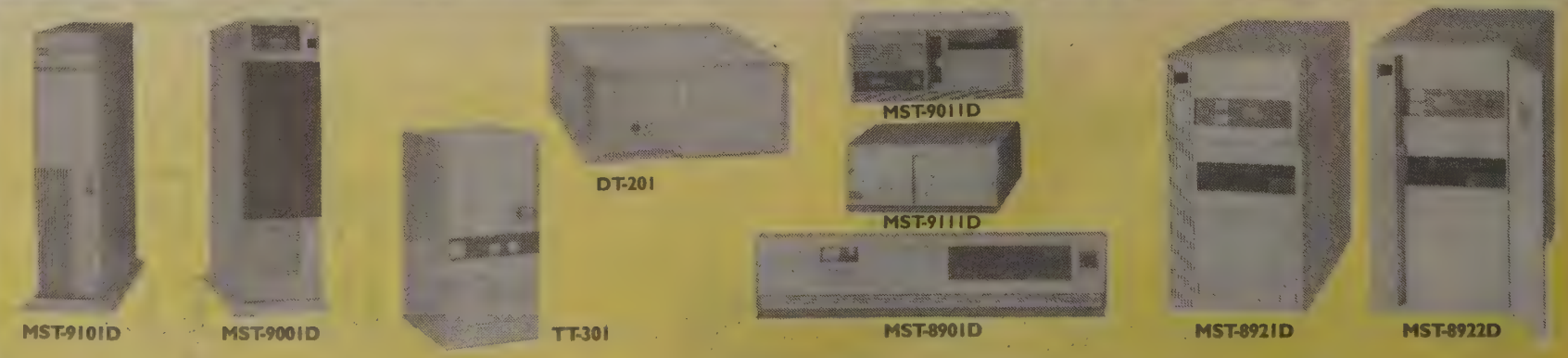

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are several thousand illustrations, and every word in every definition is indexed and hot-linked. This lets you look up words in definitions that you are unfamiliar with. Of all the CDTV titles I looked at, this was the one that I found most interesting and useful.

CDTV ON YOUR AMIGA

While owning a CDTV makes using CDTV titles easier, current Amiga owners may want to consider adding a CD-ROM drive instead. If you've already got a SCSI port on your Amiga—and most hard drive interface cards provide one—you can purchase a SCSI interfaced CD-ROM drive and install it on your Amiga. You'll need a SCSI CD-ROM driver, either from Canadian Prototype Replicas or from Xetec (other companies are also developing software drivers).

When I tested this setup, the Lemmings and Advanced Military Systems discs worked out of the box, and the Illustrated Works of Shakespeare worked with just a little tweaking to its startup sequence. For some reason the Xiphias discs would not work. Commodore has been advising CDTV developers on anti-piracy techniques (as if everyone had either a 600MB hard drive to copy CD-ROMs to or a $20,000 CD-ROM write-once system), and it's possible that some errant protection scheme is the cause of the failure. Equally possible is that the program relies on some CDTV-specific ROM routine.

Commodore has released an upgrade kit for CDTV that includes a keyboard, mouse, and floppy drive for under $300. This signals that the company has finally given up on the myopic marketing position that denied CDTV was a computer.

IN OTHER NEWS

- Late-breaking news from Commodore: They've developed a standalone runtime module for AmigaVision which they will license to developers for a reasonable fee. It requires far less memory overhead to play AmigaVision flows, and this will let more developers use AmigaVision as an authoring system.

  Most developers expressed a preference that Commodore release the runtime with no charges attached. The license fee may limit the release of shareware flows, but most expect that users will ignore the license requirement; and Commodore insiders have said informally that they anticipate that the runtime will "be in everyone's hands in a week." ■

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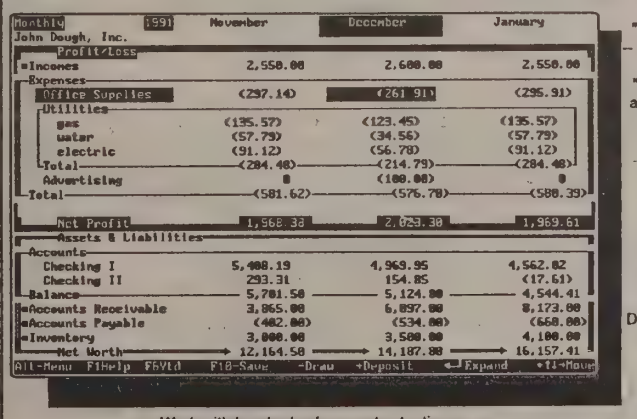

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RESOURCES

Calendar Of Events

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December 29 Computer Show & Sale. Orange County Fairgrounds. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

JANUARY

January 4 Computer Show. Orange County Fairgrounds, Costa Mesa. Computer Marketplace. Call: 1-800-800-5600.

January 4 Computer Show & Sale. Anaheim Stadium. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

January 5 Computer Show. Sherman Square Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

January 5 Computer Show & Sale. Burbank Hilton Convention Center. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

January 5 Computer Show & Sale. Civic Aud, Oxnard. MarketPro. Call (415)388-8893

January 8–March 24 Intro To C Programming Language Course. Woodland Hills. UCLA Extension. Call: (310)825-4100.

January 8–March 25 Relational Database Technology, Part 1 Course. Woodland Hills. UCLA Extension. Call: (310)825-4100.

January 8–March 25 C Programming For The IBM/PC And PS/2 Course. Woodland Hills. UCLA Extension. Call: (310)825-4100.

January 11–12 Computer Show. L.A. Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

January 12 Computer Show & Sale. Glendale Civic Auditorium. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

January 13–14 Midrange Expo. Anaheim. National Productions. Call: (508)745-6010.

January 13–14 Q&A: Database/Word Processing Software Workshop. Los Angeles. Symantec Training Group. Call: (415)898-1919.

January 15–17 Time Line: Project Manager Software Workshop. Los Angeles. Symantec Training Group. Call: (415)898-1919.

January 16–17 Macintosh Word Processing And Graphics Workshop. Los Angeles. UCLA Extension. Call: (310)206-1422.

January 17 Downsizing Conference: An Executive Briefing On The Technology And Management Issues. Los Angeles. Digital Consulting. Call: (508)470-3880.

January 17–18 Novell NetWare/LAN Course. Los Angeles. UCLA Extension. Call: (310)206-1579.

January 18 Computer Show. Convention Center, Long Beach. Computer Marketplace. Call: 1-800-800-5600.

January 18 Computer Show & Sale. CSU Northridge, North Campus. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

January 19 Computer Show & Sale. Scottish Rite Temple, San Diego. MarketPro. Call: (415)388-8893.

January 22–24 NeXTWORLD Expo: First International NeXT Conference. San Francisco. *NeXTWORLD* Magazine. Call: World Expo Corp., (508)879-6700.

January 27–28 NeXT Computer Short Course. Los Angeles. UCLA Extension. Call: (310)206-1638.

January 28–30 Windows & OS/2 Conference. San Jose. *PC Week.* Call: (510)601-5000.

JANUARY 17–18, 1992

INTERMEDIATE NOVELL NETWARE/LAN WORKSHOP

UCLA

UCLA Extension presents a new two-day course, Intermediate Novell NetWare/LAN Workshop, covering the advanced capabilities available in the Novell NetWare environment. The course is designed to be a practical, hands-on approach to using Novell NetWare. Specific topics include: NetWare 286 to 386 upgrade options; advanced print functions; multiple LAN environments using bridges; LAN/Mainframe connectivity using Novell's SNA gateway; dial-in/dial-out options; analysis of LAN performance; end-user support products; NLMs; troubleshooting tools; and the LAN lifecycle. Call: UCLA Extension, (310)209-1579.

JANUARY 11–12

COMPUTER SHOW

Pomona

Computer Marketplace computer shows feature hundreds of exhibits with thousands of products. Admission is $6.00 and shows are from 10:00 am to 5:00 pm. LA Fairgrounds, Pomona. 1-800-800-5600.

FEBRUARY

February 1 Computer Show. L.A. Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

February 2 Computer Show. Sequoia Conference Center, Buena Park. Computer Marketplace. Call: 1-800-800-5600.

February 2 Computer Show & Sale. Glendale Civic Aud. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

February 4–6 Buscon 92 West Conference & Expo. Long Beach. CMC Call: (203)852-0500.

February 6–7 Desktop Publishing With PageMaker Class. Los Angeles. UCLA Extension. Call: (310)206-1422.

February 8 Computer Show. SDSU Aztec Center, San Diego. Computer Marketplace. Call: 1-800-800-5600.

February 8 Computer Show & Sale. Anaheim Stadium. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

February 8–March 24 Quantel Paintbox Workshop. Los Angeles. UCLA Extension. Call: (310)206-1422.

Continued on page 130

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From 5 South or 805 South: Take 8 East to College Avenue exit South, turn left to SDSU visitor parking. Take footbridge across to Aztec Center/Montezuma Hall.

COSTA MESA — ORANGE COUNTY FAIRGROUNDS
Take Hwy. 405 to Fairview Exit. Go So. on Fairview to Arlington Dr. Left on Arlington Dr. to Gate 4.

POMONA — L.A. COUNTY FAIRGROUNDS (FAIRPLEX)
Exit Highway 10 at Ganesha/Fairplex Drive. Go North to McKinley and turn right. Then turn left on White Avenue to Gate 14.

BUENA PARK — SEQUOIA CONFERENCE CNTR.
Take the Beach Blvd. Exit off the 91 Freeway and go 1 block North to 7530 Orangethorpe.

LONG BEACH — CONVENTION CENTER
From L.A. take Long Beach Freeway (710) So. to Linden, left on Linden to the Convention Center.

RESEDA — SHERMAN SQUARE ENTERTAINMENT CNTR.
From 101 Freeway: take the Reseda off ramp. Turn left (if travelling E.) on to Reseda Blvd. to Sherman Way, turn right, one block, to Canby Street. 18430 Sherman Way.

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January 5, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

SPECIAL 2-DAY SHOW!
January 11 & 12, 1992 SATURDAY & SUNDAY
L.A. Fairgrounds (Fairplex), Pomona

January 18, 1992 SATURDAY
Convention Center, Long Beach

February 1, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

February 2, 1992 SUNDAY
Sequoia Conference Center, Buena Park

February 8, 1992 SATURDAY
S.D.S.U. Aztec Center, San Diego

SPECIAL 2-DAY SHOW!
February 22 & 23, 1992 SATURDAY & SUNDAY
L.A. Fairgrounds (Fairplex), Pomona

March 7, 1992 SATURDAY
Sherman Square Entertainment Center, Reseda

March 14, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

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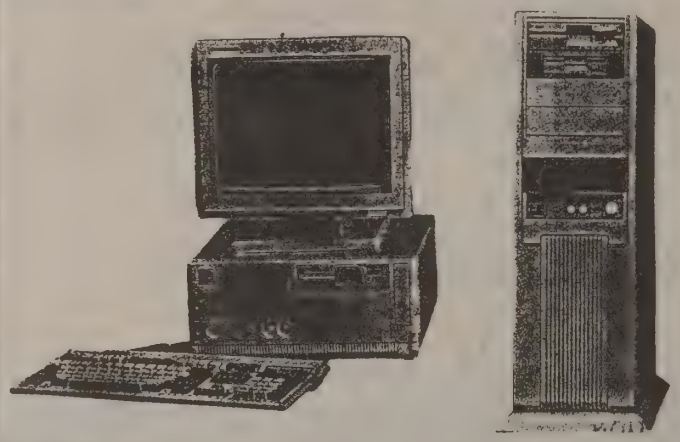

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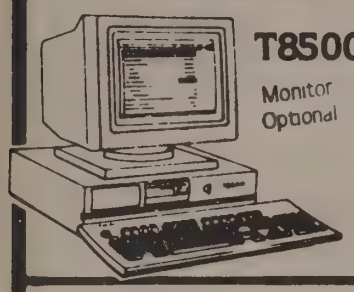

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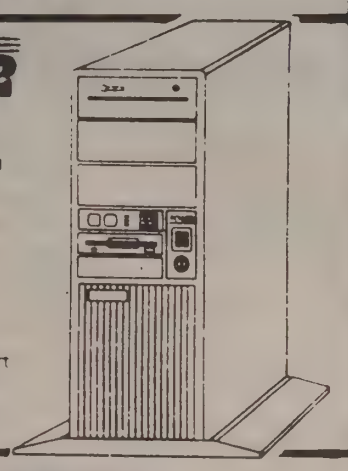

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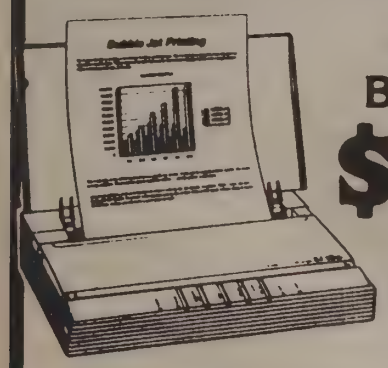

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213

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Computer World BBS. (213)259-0910. 8-N-1, 24 hrs., 300/1200/2400. 200MB database, 20+ multiplayer online games. No ratios. Free. [Exp. #92.]

The Damascus Road. (213)386-1977. 8-N-1, 300/1200/2400. Christian multiline DLX. Sysop: John. [Exp. #92.]

EBBS Friendship. (213)293-7767. BBS for writers, artists, and fans of Star Trek, sponsored by Infinite Savant Publishing. No fee, but reg required. [Exp. #92.]

INFOmania BBS. (213)850-1627. 8-N-1, 24 hrs., 300/1200/2400/9600. CompuCom modem, running RBBS, lots of IBM software. No ratios, Fidonet conferences. Sysop: Frank Keeney. [Exp. #93.]

LAAUGLine. (213)387-1002. 24 hrs., 300/1200/2400. Amiga. Sysop: Thom Irwin. [Exp. #92.]

Lynzie's Motherboard. (213)848-2700. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, email, public forums, local social events, over 800MB online. More local numbers available online. Sysop: Lynzie Flynn. [Exp. #93.]

Original Apple Corps BBS. (213)454-4660. 300/1200/2400. Apple II support. Free. Sysop: Sheila Dowst. [Exp. #93.]

Out Of Space. (213)962-9426. 300/1200/2400. UFO Information Center. Sysop: Michael Dupre. [Exp. #93.]

Royal Rock BBS. (213)934-2812. 8-N-1, Mon.–Fri., 8 pm–9 am. WWIV. IBM Technical Support & online games. Free, reg required. Sysop: Watcher. [Exp. #92.]

South Bay Commodore Users Group (SBCUG). (213)634-8818. 24 hrs., 300/1200/2400. Graphics and library. Sysop: Jeffery Baldwin. [Exp. #93.]

Twelve Steps BBS. (213)654-9160. 8-N-1, 24 hrs., 300/1200/2400/9600. For members of twelve step programs such as AA, SAA, OA, ACA/ALANON, etc. Free. Sysop: Peter Rath. [Exp. #92.]

310

Amiga Artists Club & BBS. (310)590-9949. 8-N-1, 24 hrs., 300/1200/2400. UL/DL, 170MB, art SIGs, Amiga bases, and online games. [Exp. #92.]

AmigaSerV BBS. (310)983-1600. 24 hrs., 1200/2400/9600. Amiga only! 670MB, 4 lines, 3300+ files, C-Net. Sysop: Ed Brown. [Exp. #93.]

Close Encounters. (310)947-3997. 24 hrs., 300/1200/2400. A matchmaking social system for ages 18 and over (adult themes in some, not all, conferences). [Exp. #93.]

Compu-Net! BBS. (310)823-3609. 300/1200/2400/9600. 1GB, 15 separate systems in one call. Adult, finance, sports, Windows, occult, IBM, and more. [Exp. #93.]

CSULB BBS. (310)985-8737. Open daily, 2400. A multiuser TBBS system. Free. Sysop: Mark E. Bishop. [Exp. #92.]

Drug Abuse Information (DIAMP). (310)825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads, and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #92.]

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GS-BUG BBS. (310)516-0834. 8-N-1, 24 hrs., 300/1200/2400. The Greater South Bay PC User Group, Inc. PD database, IBM SIGs, and more. Free, validation req. Sysop: Dave Clifford. [Exp. #93.]

Hatch.uucp. (310)822-3970. 1200/2400/9600. Usenet feeds, 1200 Newsgroups, worldwide internet email, domain addresses avail. Sysop: Mike Barnadett. [Exp. #93.]

KBBS Los Angeles. (310)558-0145, 532-1700. 8-N-1, 300/1200/2400/9600. LA's busiest, with 32,000 channel chat, 13,000+ files, 32 lines, parties, over 3000 members. [Exp. #91.]

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Modem Butterfly's Connection. (310)841-6900. 8-N-1, 24 hrs., 300/1200/2400. Intelligent fun, chatting, events. 800MB online. [Exp. #92.]

The MUG BBS. (310)860-4133. 8-N-1, 24 hrs., 300/1200/2400. Tandy support group. Sysop: Walt Baird. [Exp. #93.]

The Nut House. (310)598-9265. 24 hrs., 2400/14,400. IBM only, 210MB storage. Msg base: CIA activities, AIDA awareness, spirituality, recovery. WWIV-NET. Sysop: Doctor D. [Exp. #92.]

Original Apple Corps BBS. (310)454-4660. 300/1200/2400. Apple II support. Free. Sysop: Sheila Dowst. [Exp. #91.]

the original off-off broadway bbs. (310)453-7038. 8-N-1, 24 hrs., 300/1200/2400/9600. Non-subscription, text files/messages only. Using MajorBBS software and CompuCom Speedmodem. Sysop: James Gossage. [Exp. #93.]

619

Satang BBS. (619)364-0033. 8-N-1, 24 hrs., 300/1200/2400. 170MB online, Wildcat! IBM files & programs, religion and metaphysics. Sysop: Ed Shimko. [Exp. #92.]

714

1-Stop Shopping BBS. (714)229-8968. 8-N-1, 24 hrs., 300/1200/2400. Free electronic shopping mall featuring computer hardware, software, and services. Sysop: 1-Stop Shopping. [Exp. #92.]

Christian Information Exchange. (714)666-9238. 8-N-1, 300/1200/2400/9600. Anaheim. Over 90 local and international conference topics from five networks, 60MB text and software files downloadable. [Exp. #91.]

Cristal Connection. (714)880-3306. Games, email, bulletins, homeshopping, and more. [Exp. #91.]

EcTech BBS. (714)780-5175. 24 hrs., 1200/2400/9600. Six nodes, 2GB, GIFs, Music, Windows. Free 45 mins. a day. Relay net mail. Sysop: Jim Pierce. [Exp. #93.]

Lynzie's Motherboard. (714)776-4198. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, email, public forums, local social events, over 800MB online. More local numbers available online. Sysop: Lynzie Flynn, [Exp. #93.]

NoHo BBS. (714)848-1506 (2400–14,400), 848-9714 (300–9600). Wildnet & U'ninet echo mail, online games, 1.6GB. Sysop: Brian W. Parker. [Exp. #92.]

The Party Place. (714)537-3959. 24 hrs., 300/1200/2400. 1000s of shareware programs. Use password "MICRO". Sysop: Craig Barnes & Korben Kirscht. [Exp. #91.]

PC-Applications BBS. (714)432-9104, 557-8351, 557-6688. 24 hrs., 1200–14,400. Online games, email, echomail, conference areas, 15,000 files for downloading. Sysop: Dave Robinson. [Exp. #93.]

The PC Sports Connection. (714)533-6728. 8-N-1, 24 hrs., 300/1200/2400. Using Searchlight for unique games, fantasy leagues, and sports talk. Sysop: Keith Jefferson. [Exp. #91.]

Pleasure Island. (714)952-8910. 24 hrs., 1200–38,400. Using PCBoard, 1GB of online files/net-mail. Adult access available. [Exp. #92.]

SOCCC BBS. (714)832-8249. 8-N-1, 24 hrs., 300/1200/2400. Public domain & shareware for IBM, Apple & CP/M. Sysop: Brian King. [Exp. #92.]

WinSIG BBS. (714)363-9802. 24 hrs., Windows 3.xx shareware. Sysop: Firas Bushnaq. [Exp. #92.]

805

Lynzie's Motherboard. (805)482-5776. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, email, public forums, local social events, over 800MB online. More local numbers available online. Sysop: Lynzie Flynn. [Exp. #93.]

Market Network BBS. (805)273-2921. 8-N-1, 9–Midnight, 300/1200. Free. Amway Dist., files, tech products. Sysop: Phil Kaufman. [Exp. #92.]

Stepping Stone Hotel BBS. (805)298-3997, 266-2315. 8-N-1, 300/1200/2400. Antelope Valley and Santa Clarita Valley. Free chat, 18+ verification req., 16-line DLX. [Exp. #91.]

Y-Not? (805)985-1657. 8-N-1, 24 hrs., 1200/2400. Shareware and public domain files, ads, messages. New: Windows 3.0 files and help area. Sysop: Frank Segesman. [Exp. #91.]

818

Al/Transylvania. (818)591-8642. Discounts galore (hardware/software), online games, Computer Literacy Info, chat, post. Sysop: M. Ehrens. [Exp. #92.]

A Tin Shack BBS. (818)992-3321. 300/1200/2400. For College students and staff, multiline, all computers. Sysop: Guy Norenberg. [Exp. #93.]

Another BBS! BBS. (818)960-7520. 8-N-1, 300/1200/2400. UL/DL, games, TomCat mail (coming soon), running Wildcat!, no fees. Sysop: Steve Hemphill. [Exp. #92.]

The Continuum Online. (818)441-2625. Multi-interest, echo mail, and doors. Sysop: Jon Carmichael. [Exp. #91.]

Direct Marketing Connection. (818)785-3914. 8-N-1, 2400. Free classified ads for the direct marketing industry. Sysop: Gene Mallory. [Exp. #92.]

Glendale Litera BBS. (818)956-6164. Environment and nature topics and information. [Exp. #92.]

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KBBS Los Angeles. (818)989-3875. 8-N-1, 300/1200/2400/9600. LA's busiest, with 32,000 channel chat, 13,000+ files, 32 lines, parties, over 3000 members. [Exp. #91.]

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You can update or renew your listings at any time. If yours is missing, send us a new one! Send your listing information to: US Mail should go to: MicroTimes User Group, 3470 Buskirk Ave., Pleasant Hill, CA 94523. Faxes are welcome at (510)934-2417 or (213)467-5486.

Email can be sent to: microx@well.sf.ca.us. Or MCI:MICROTIMES.

Starting November 2, 1991, the 213 area code will be split again. If the number for your BBS, User Group, Association, or Calendar listing will change to 310, please notify us—by letter, fax, or email—so our listings will include this information.

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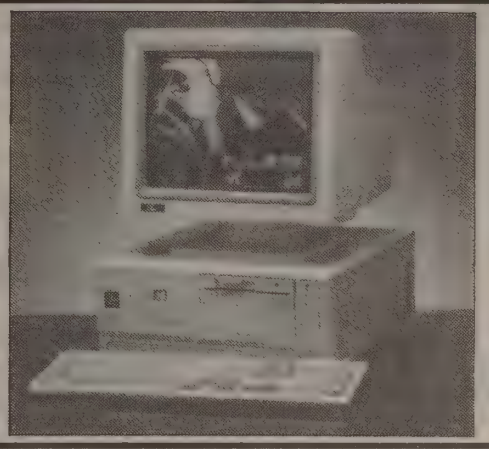

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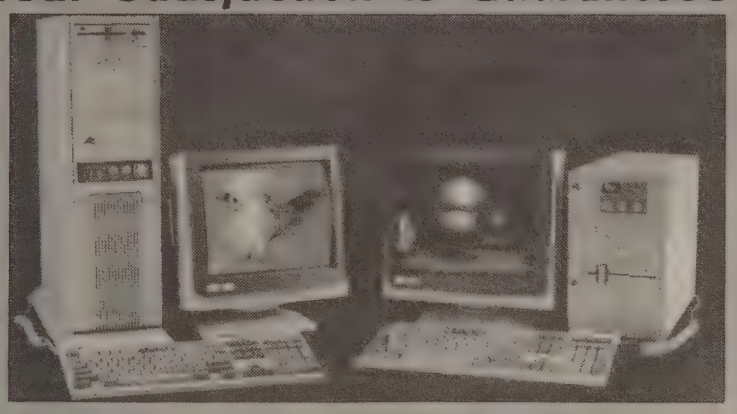

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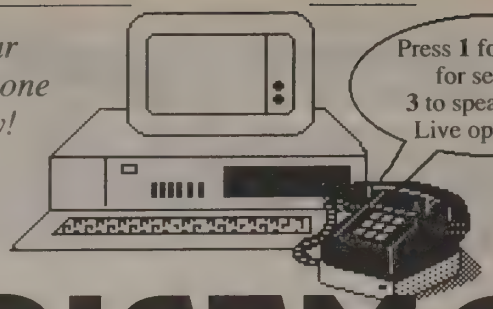

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Panasia BBS. (818)240-0415. 1200–14,400. Glendale, QWK/REP, Intelac RegHub, no fees. [Exp. #92.]

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Stepping Stone Hotel BBS. (818)831-7894, 559-6446. 8-N-1, 300/1200/2400. Granada Hills and Glendale/Burbank. Free chat, 18+ verification req., 16-line DLX. [Exp. #91.]

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ASSOCIATIONS

American Computer Association. Call: (714)549-3633. Was formed to provide members with service, protection, and advice at the lowest price. [Exp. #91.]

Black Data Processing Assoc., LA Chapter. Meetings: 4th Tues., 6:30 pm, ULTC, 7226 S. Figueroa St., Los Angeles. Call: (310)673-6522 or 1-800-727-BDPA. [Exp. #91.]

CALPA—California American Legion Press Association. 4774 College View Ave., Los Angeles, 90041. Call: (213)257-7179. Group of Editors of American Legion publications. [Exp. #94.]

FASCAL—Filipino American Society For Computer Activities And Literacy. Meetings: 2nd Sat. of alt. months, 1–4 pm, LA Midtown Hilton. Annual dues $20. Write: PO Box 3913, Chatsworth, CA 91313. [Exp. #91.]

Independent Computer Consultants Association. Meetings: 1st Thurs., 6:00 pm, McGuire's Restaurant, 8232 DeSoto Ave., Canoga Park. The LA chapter provides referral services. Call: (213)872-1811. [Exp. #93.]

Independent Computer Consultants Association, Los Angeles Chapter. Meetings: 1st Thurs., 6:00 pm, Proud Bird Restaurant, 11022 Aviation Blvd., Los Angeles. The LA chapter provides referral services. Call: (213)872-1811. [Exp. #96.]

Orange County Association Of PICK Professionals. Meetings: 3rd Wed. Dinner: Members, $20; Non-members, $25. Without reservations add $5. Call: (714)641-6347. [Exp. #92.]

USER GROUPS

ACCOUNTING

L.A. County Cougar Mountain Accounting Software User Group. Call: (818)709-2762. [Exp. #92.]

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wed., 7:30 pm, Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Many SIGs, rookies, monthly PD disks. Call: Kip Hammond, (310)390-3010. [Exp. #94.]

AMSTRAD

Amstrad User Group, U.S.A. Meetings: 12740 Matteson Ave., #3, Los Angeles. Free mail and phone support for PCW8256. Call: Harley Ristad, (310)397-7981. [Exp. 91.]

APPLE

Original Apple Corps, Apple II User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660 [Exp. #96.]

ATARI

AAOC—Atari Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Orange Christian Church, 16561 E. Lincoln, Orange. Call: Ed, (714)779-5405. [Exp. #92.]

ATESIG—Atari 8-bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative group for Model Railroad applications. Call: (310)430-5433. [Exp. #91.]

South Bay Atari Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd. Active since 1985, novices & all skills welcome. Call: (310)375-4839. [Exp. #91.]

CAD/CAM

Los Angeles Area AutoCAD User Group. Meetings: 4th Wed., 6:30 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia Blvd., Burbank. Meetings feature tutorials, Q&As, demos, hands-on, BBS, and newsletter. Call: M. Berman. (818)762-9966. [Exp. #96.]

COMMODORE

C128 West Commodore 128 User Group. Meetings: Covina & Santa Monica. Free membership. Large disk library. Call: John, (818)331-1589; Paul, (818)892-3859; BBS (714)598-1755 FidoNet. [Exp. #96.]

Commodore Helpers Of Long Beach. Meetings: 2nd Sat., 9:00 am. St. Timothy's Lutheran Church, Woodruff and Arbor in Lakewood. Supports 64/128 models. Call: Tom Hoy, (310)424-0508. [Exp. #92.]

C-TUG (Commodore Technical User Group). Meetings: Western Federal Savings and Loan, 2233 N. Tustin Ave, Orange. Speakers, demos, help with any Commodore and Amiga questions. Call: Lou Palush, (714)532-1802. [Exp. #91.]

Orange County Commodore Club. Meetings: 4th Sat., 11 am, Fidelity Federal Bank, 19900 Beach Blvd., (Newland Shpg Ctr) Huntington Beach. Call: Mike Moore, (714)668-9715. [Exp. #96.]

The Software Palace User Group. Write: Jeffrey McVeigh, 8978 Magen Ave., West Hills, CA 91304. [Exp. #92.]

South Bay Commodore Users Group. Meetings: 3rd Thurs, 7:00 pm. SEC Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor). Free and open to all who use or own Commodore computers and to those who would like to receive or exchange information on programs, applications, or hardware. Call: (213)324-8357. [Exp. #96.]

South Orange Commodore Klub. Meetings: 3rd Sat., 9:00 am, Union Federal, 23688 El Toro Rd., El Toro. All Commodore and Amiga users. Call: Don, (714)830-2430. [Exp. #92.]

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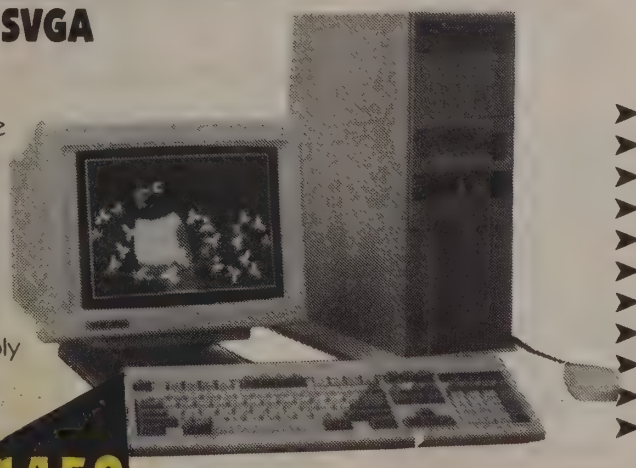

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EPSON

Epson User Group Of Orange County. Meetings: 3rd Sat., 10:00 am, rm. 25, 2151 Michelson, Irvine. Support, parts, publications, loaner, demos, software. Call: (714)893-3305. [Exp. #91.]

SFV & LA Epson QX User Group. Meetings: 3rd Mon., 7:30 pm, The Meeting Place, Fallbrook Mall, Canoga Park. Call: Bill Winter, (818)347-7417. [Exp. #93.]

IBM & COMPATIBLES

4DOS User Group. Starting new. Call for free shareware copy of 4DOS. Call: Richard, (818)788-7283. [Exp. #92.]

Channel Islands PC User Group. Meetings: 2nd Sat., 9:30 am, Camarillo Community Center, 1605 Burnley St., Camarillo. Meetings feature help session, software/hardware demos, and more. $20/yr. Visitors welcome. Call: Bob, (805)983-4741. [Exp. #93.]

Computer-RAP Club User Group. Meetings: 3rd Tues., 7:00 pm, 730 Pine Ave., #411, Downtown Long Beach. Call: (310)436-8944, between 6:30 pm–9:30 pm. [Exp. #93.]

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Christ King Lutheran, 2706 W. 182nd St., Torrance. Visitors welcome. Call: (310)542-4996. [Exp. #96.]

Long Beach IBM PC And Compatibles User Group. Meetings: 3rd Wed., 7:00 pm, Los Altos Methodist Church, 5950 E. Willow St., at Woodruff. Novices and experienced welcome. BBS, PD library, newsletter, and SIGs. Call: Jeff Wells, (310)439-7114. [Exp. #94.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School Cafeteria. Meetings are free and there are always live presentations and giveaways. Call: (310)473-6668. [Exp. #96.]

NOCCC. Meetings: 1st Sun., Chapman College. Call: (714)998-8080. [Exp. #92.]

Pasadena IBM User Group. Meetings: 3rd Wed., 6:30 pm, Huntington School, 1700 Huntington Dr. Speakers on hardware/software, SIGs, BBS, library, and newsletter. Call: Steve Bass, (818)795-2300. [Exp. #96.]

South Orange County Computer Club (SOCCC). Meetings: 3rd Thur., Westminister Community Center. IBM, Apple, CP/M. Vendor presentations, newsletter, etc. Membership: $12 single; $14 family. Call: (714)531-0376. [Exp. #92.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)496-8152 .[Exp. #96.]

Valley Computer Club. Meetings: 1st Wed., 7:00 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia, Burbank. BBS, PD library, SIGs, newsletter. All welcome. Call: (818)842-3707 or (213)227-9684. [Exp. #96.]

Ventura PC User Group. Meetings: 4th Wed., 7:30 pm, Poinsettia Pavilion, Canada Larga Rm., 3451 Foothill Rd., Ventura. Five year old group, newsletter, public domain/shareware programs, and hotline for members. Call: Ron Poast, (805)644-1227. [Exp. #96.]

VICUG (Valley IBM/Compatibles User Group). Meetings: 4th Fri., 7:00 pm, Security Pacific Bank, 14801 Ventura Blvd., Sherman Oaks. Membership fee $25/yr or $3 at the door. Call: Harry Tischler, (818)997-1470. [Exp. #93.]

VICUG—DTP (Valley IBM/Compatibles User Group—Desktop Publishing). Meetings: 1st Fri., 7:00 pm, Union Federal Savings Bank, 13330 Ventura Blvd., Sherman Oaks. Membership fee $25/yr or $3 at the door. Call: Harry Tischler, (818)997-1470. [Exp. #93.]

The Westside Computer User Group. Meetings: 1st Sat., 6:30 pm, Flakey Jake's Restaurant, Pico at Sepulveda. Everyone and all types of computers welcome. Call: Dave, (213)857-5800. [Exp. #92.]

KAYPRO

West Los Angeles Kaypro User Group/KAYOS Kaypro User Group. Meetings: 4th Mon. of even months, 6:30 pm, El Segundo. Call: Margot, (310)379-8339. [Exp. #94.]

K-MAN

Southern California KnowledgeMan User Group. Meetings: 1st Wed., 7:00 pm, Honda North America, Bldg. 300, 700 Van Ness Ave., Torrance. Call: (213)662-9910. [Exp. #96.]

MACINTOSH

MacValley User Group. Meetings: 1st Wed., 7:30 pm, Wilkinson Senior Center, 8956 Vanalden, Northridge. Meetings, new product demos, newsletter, PD and shareware software, and more. Membership dues, $30/yr. Visitors welcome. Call: Bob Campbell, (818)784-8666. [Exp. #96.]

San Gabriel Valley Mac Users Group. Meetings: 1st Thurs., 7:30 pm, Pasadena Central Library Auditorium. Call: (213)684-ICON. [Exp. #91.]

West Orange County Macintosh User Group (WOCMUG). Meetings: last Tues., 7:00 pm, F&M Bank, Rossmoor Shopping Center. Visitors always welcome! Call: (310)493-1240. [Exp. #93.]

Whittier Area Mac User Group. Meetings: 2nd Sat., 10:00 am, Granada Heights Friends Church, La Mirada. Call: (310)947-2447. [Exp. #91.]

NeXT

Southern California NeXT User Group. Meetings: throughout LA County. Call: Mike Mahoney, (213)985-1550 or Bob Desharnais, (213)343-2056. [Exp. #93.]

TEXAS INSTRUMENTS

Brea 99'ers User Group. Meetings: 1st Tues. Call: (714)871-3405. [Exp. #92.]

TI/944A Home Computer User Group. Meetings: 2nd Mon., 7:00 pm, Pomona First Federal, 9090 Central Ave., Montclair. Monthly newsletter, demos, and fairware. Call: (714)627-3403. [Exp. #96.]

TI User Group Of Orange County. Meetings: 2nd Mon., 7:30 pm, Fidelity Federal, St. Andrews & Seal Beach Blvd., Seal Beach. Supporting the TI99/4A computer. Call: Stan, (714)892-2818. [Exp. #91.]

THEOS

THEOS User Group. Call: Fred Bellemy, (805)965-0265. [Exp. #92.]

UNIX

UNIX User Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Learnings Center, 1231 E. Dyer Rd., Santa Ana. Call: Vince, (714)556-1220, ext. 126. [Exp. #92.]

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TVN—The Toasted Video Network. Video Toaster Network. Call: James, (714)695-1665. [Exp. #92.]

MicroTimes Classifieds Work! Call (213) 467-7878 for details.

RESOURCES

Calendar Of Events *Continued from page 122*

February 10–12 14th Annual Conference On Computer Graphics '92. Walt Disney World, FL. Frost & Sullivan. Call: (212)233-1080.

February 11–13 NetWorld 92. Boston. Bruno Blenheim, Inc. Call: 1-800-829-3976.

February 23–28 Software Development '92 Conference & Expo. Santa Clara. Software Development Shows. Call: (415)905-2741.

February 27–28 Media '92—The International Expo And Conference For Multimedia Technology And Products. Los Angeles. Mitch Hall Associates. Call: (617)361-1031.

MARCH

March 9–12 CAD & Engineering Workstations '92 And Business Graphics '92 Conference & Exposition. Anaheim. NCGA. Call: 1-800-255-NCGA.

March 10–11 4th International Conference On Strategic Software Systems: Visions Of The Year 2000. Alabama. Univ. of Alabama in Huntsville. Call: 1-800-448-4031.

March 11–13 Intro To QuarkXpress Class. Los Angeles. UCLA Extension. Call: (310)206-1422.

March 23–24 Q&A: Database/Word Processing Software Workshop. Los Angeles. Symantec Training Group. Call: (415)898-1919.

March 25–27 Time Line: Project Manager Software Workshop. Los Angeles. Symantec Training Group. Call: (415)898-1919.

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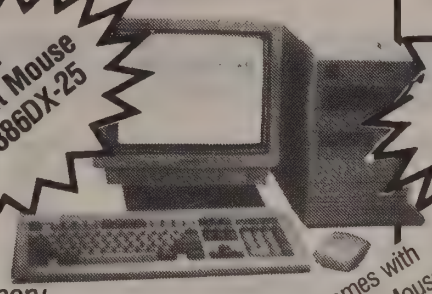

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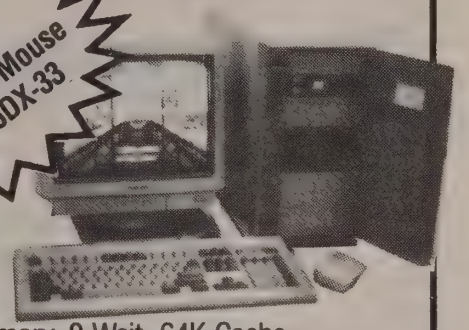

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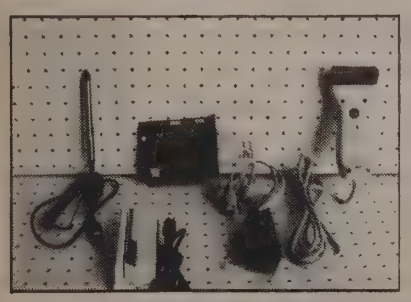

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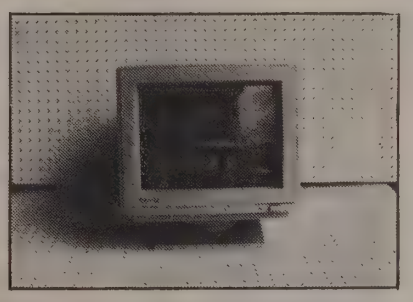

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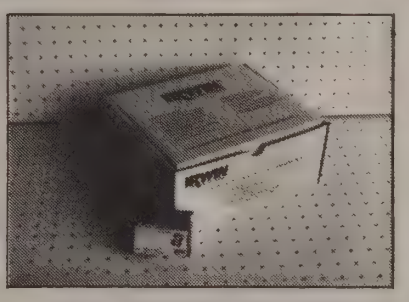

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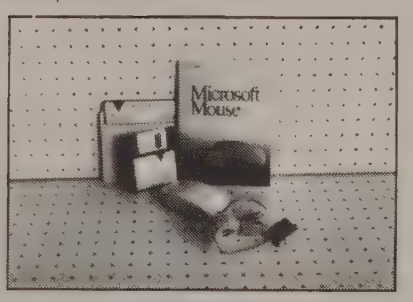

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Continued from page 38

time they log in, so that if someone else has used their account, they know it.

The system should show you your last login date, and you should check it. If it shows you as logged in when you weren't, suspect that your account's been compromised and change your password immediately.

•Find a more privileged user logged in on a terminal that's unattended. What the culprit does with this depends on how much time he has, how much he knows, and what he's trying to do—alter the contents of the payroll records, say, or change file permissions so that someone else can access the privileged user's files later.

Users should never walk away from a terminal without logging out or locking it. (Speaking of lock programs, if you're running a windowing environment, a good lock program must prevent the creation of new windows, not just lock all the existing ones, or someone can simply make a new window and get into your account.)

In some environments, expecting users not to leave terminals logged in is probably wishful thinking. In this case, there's no alternative to careful administrative auditing. Even then it's far too easy to miss an unauthorized alteration in some circumstances.

•Watch a more privileged user type her password in.

The countermeasure is to avoid typing your password if anybody can see you. This isn't always easy either.

•Print the password file (if you can read it) and run a password-cracking program. This method is an end-run around the password encryption program—the cracker doesn't actually solve the encryption, but bypasses it. The cracking program takes common passwords, users' names, login names, etc. and encrypts them, then compares the results to the encrypted passwords stored in the password file. When the cracker gets a match, he knows what the plaintext of the password was, and thus can log in.

Administrative countermeasures include making the password file unreadable. The user's countermeasure is to pick an unguessable password that the password-cracking program won't check.

Cryptanalytic attack on the password file, if you can read it, is theoretically possible. To the best of my knowledge, however, it's usually impractical, or at least very hard work, on modern systems. This would involve actually solving and reversing the encryption, not bypassing it as described above.

•Gather a list of valid usernames from printouts, asking the computer who's logged on, etc. Compile common, semi-public information about each user—nicknames, spouse's name, mother's maiden name, pet's name, kids' names, birthdate, anniversary, account number, social security number, phone number, license plate, hobbies and common words from them, job title, common terms from their jobs, etc. Try logging in using these as passwords.

The countermeasure is that readily discoverable information of this sort should never be used for a password. (It shouldn't be used for an automatic teller machine password either. I'm willing to bet that a substantial portion of ATM PINs are birthdates, anniversaries, graduation dates, etc., if they fit into four digits neatly. Far too many of the rest are the last four digits of the user's phone number or social security number.)

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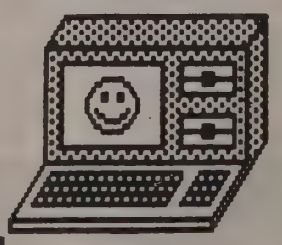

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•Try the user's password on another system, if you know what it is. Some users use the same password everywhere, meaning that whoever compromises one account can compromise them all.

You should have a different password for every system you have an account on. If you have a lot of accounts, you're probably going to want to write them down. Make sure nobody can read the list, either by keeping it in your possession, or enciphering it. Use an encipherment method that will defy casual observation—you want something more complicated than Caesar's, because that's too easy to reverse with some common computer commands. Gregg shorthand is also not suitable for obvious reasons. For most applications, this doesn't have to be overly complicated, if your passwords are sufficiently unlikely. It should be complex enough not to be readily solvable by inspection, and simple and memorable enough so that you don't have to write the method down.

•Search the user's work areas. A lot of people write down passwords near their terminals, especially for systems where they get assigned passwords like eR#)7k!2@. Or they keep them in their desks, or some such place.

If you have to write your password down to remember it, carry it with you. Under no circumstances should you write it down and leave it unattended. That includes writing it in places you think no one will look, like on the underside of the keyboard. Don't leave it in your purse. I'm willing to bet you leave that in your desk when you walk down the hall to get a cup of coffee.

The inside of a desk practically anybody can open with a ruler, and the key to which you stick under the cactus every night after you lock up, is not a great place to tape the combination of the office safe. Or your password.

•Put a serial device (such as a printer) on a privileged user's terminal line in eavesdrop mode, and record their session, including the password.

This isn't a really common approach, but it works if the physical geometry of the place makes it difficult to follow the terminal leads. If you have a choice, run terminal wires where you can see them.

If you know what you're doing, you can usually detect the presence of the extra device with a multimeter.

Because this is about common techniques, I'm not going to cover measures like Tempest equipment, designed to prevent reconstruction of the information on the terminal screen by someone who's monitoring its electromagnetic emissions. Most installations won't encounter that kind of attack.

•Try logging in with the deplorable password list.

The deplorable password list is a collection of commonly used, ill-thought-out passwords that show up repeatedly wherever good password practice isn't enforced. It consists of test, guest, and default logins that should have been changed when the system was installed; magic words, profane words, really obvious words, and words someone thought were witty. It goes without saying that your system should not contain any of these as passwords. (See sidebar)

The chances of finding some of these passwords on a sloppily secured computer of any size are fairly good. You don't have to know anything about system calls to understand that, on any really large system that will permit three-letter passwords, there's at least one guy who thinks that "sex" is an extremely clever password.

In order to defeat password-cracking programs, passwords shouldn't be words at all. The Internet worm had a password cracker that tested "weird" words, common names, and words likely to be used by people at various computers on the net ("shakespeare," for example, is not unlikely to be used at a university).

At my installation, passwords are nonsense words that are pronounceable, like "algaebaran," or letter sequences corresponding to memorable, but unlikely, mnemonic phrases—"isftiotj" (International Society for the Improvement of Tarantula Jousting).

Is "tbontbtitq," the first letters of "To be or not to be, that is the question," a good password?

No. That's a very guessable phrase.

If I have to give a password to a user, it isn't spoken aloud, and no one is entitled to know the password except the user himself and the administrators. The employee's immediate supervisor is not entitled to know his password. This can be difficult to enforce, but I consider it necessary, because in the event that an intrusion is successful, it's much harder to track possible compromises to a password used by more than one person. Also, you can't tell who typed in data by looking at the data.

Some types of opportunistic attacks are very difficult to prevent entirely, so it's necessary to monitor the system in order to detect penetrations in progress, minimize damage, and curtail the intrusions that have already occurred. Users should monitor their own accounts and report anything that doesn't make sense—mail that sounds like it should have been addressed to somebody else, anomalous last-login times, etc. Administrators should monitor the log of logins to see if repeated failed login attempts are being made to any account to try to guess a password, to see if users are recorded as logged in simultaneously in more than one place, etc.

Only by understanding how attacks on password security are carried out do you know what to look for to detect a breach, how to construct defenses, and how to evaluate the likelihood of different types of attacks for each system. ■

Deplorable Password List

hello	password
hello_world	opensesame
love	rumpelstiltskin
sex	four-letter words
hi	god (administrators use this)
work	fred (easily typed by the one-fingered)
computer	ingres (database)
test	sysop
guest	single letters
admin	secret
administrator	demo
wheel	intro
games	me
root	account
superuser	ok
okay	login name
help	company name
please	in
system	account
yes	no
alpha	omega
single digits	first name and single digit (lisa1)
enter	wp
boss	xyzzy
systems	on
plugh	names of games
login	names of rock groups
aardvark	simple number sequences
manager	carriage return
service	field

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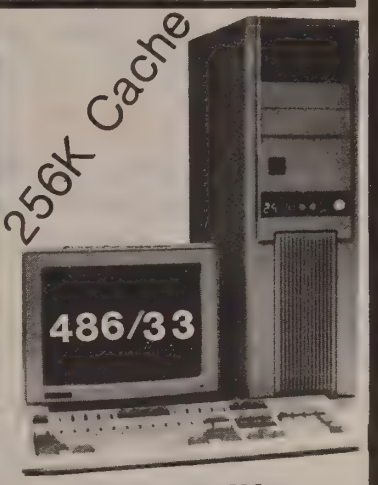

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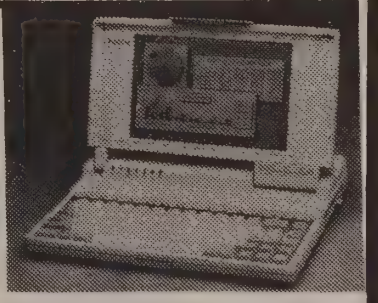

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Continued from page 110

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MONOLOGUE FOR WINDOWS

Published By: First Byte
List Price: $149
Reviewed By: Woody Liswood

Monologue is a Windows-based "text to speech" program.

When you begin, it displays a dialog box with three items: Volume, Speed, and Pitch. I recommend that you turn the volume to high, some of the time I had difficulty hearing it using the built-in speaker on both a 386 and 486 computer. Speed sets the speed of the words and Pitch sets pitch, simple. There is also a sample button to let you hear the results of your changes.

That is it. You minimize Monologue to an icon and go about your business. When you are writing a speech, for example, and want to hear how the words sound, you highlight the text, copy them to the clipboard, click on the Monologue icon, and it will read the text back to you.

The speech is easy to hear, although it does sound like Arnold, as Conan, just learning how to pronounce some words in English. When Monologue comes to a set of letters it cannot identify as a word, it spells them out. It also tells you when it comes to punctuation.

I found an instant use for Monologue under Excel. After I enter a series of numbers, I usually need to proof them to insure that they were entered correctly. I would usually either compare the original list to the data on the screen or to a printout. No longer. With Monologue, I can read through the list as it speaks to me.

There are also samples in the documentation on how to initiate Monologue to monitor the DDE channel. So, if you have the proclivity, you can have Monologue active and talking to you about whatever text is moving between applications.

Monologue for Windows is one of the easiest programs to use which I have come across. The instructions are quite simple, the program works, and this appears to be one of the first steps towards multimedia for everyone. (First Byte, Inc., PO Box 2961, Torrance, CA 90509. 1-800-545-7677) ■

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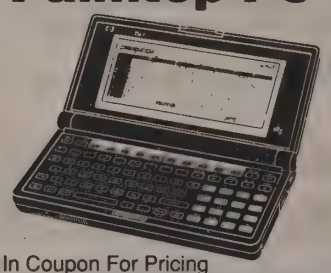

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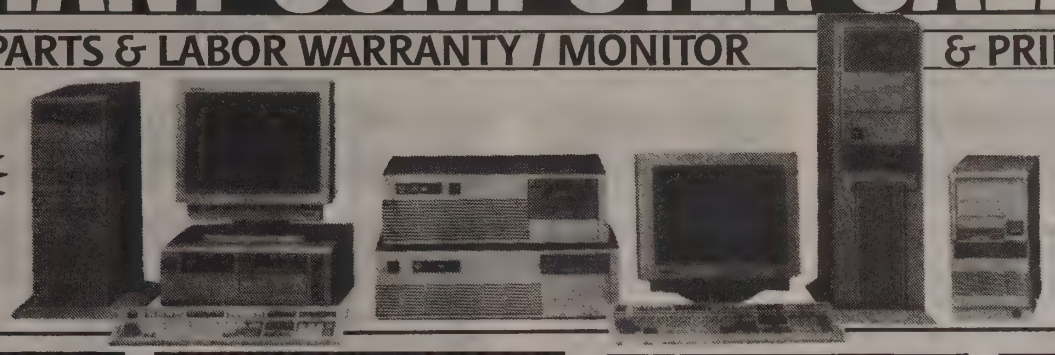

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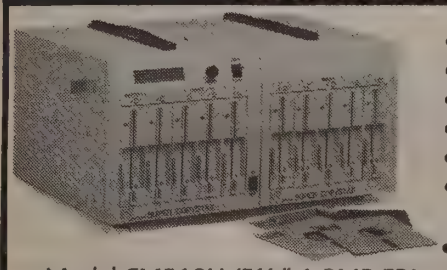

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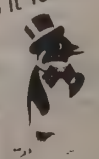

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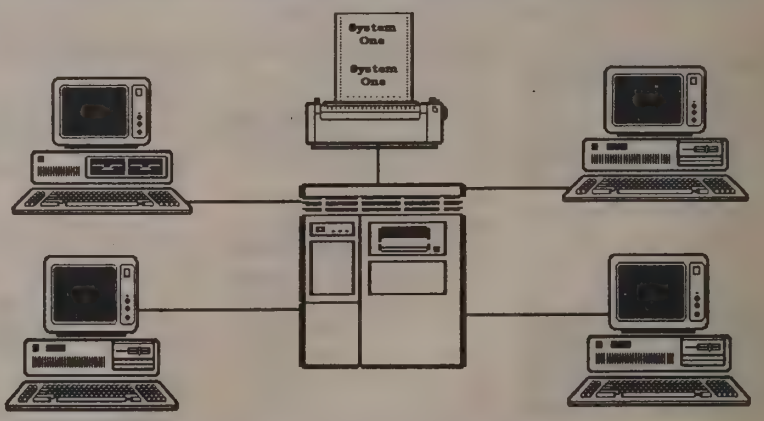

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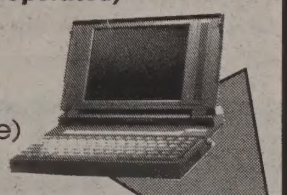

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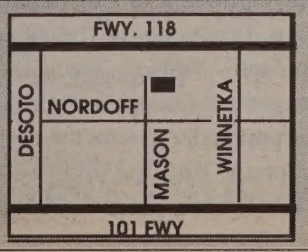

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An Ode To The CD-ROM

Look For The Bandwagon, It's Time To Jump On It

BY JOHN C. DVORAK

While the optical disc may find many specialized uses, it surely will not become the popular "on everyone's desk" accessory as expected. At least not until someone comes up with a new use for the device. Give it at least five years to find a niche.

— J. Dvorak, writing in the August 1986 issue of the *DEC Professional*.

Well, pundits can sometimes be right. It's been five years since I wrote the cautionary note above, and it's time to reevaluate CD-ROM, because 1992 will begin the explosion of acceptability.

For those of you needing some background, let's outline all the kinds of optical devices that might find their way onto the desktop. First there's the CD-ROM. It's a compact disc with data instead of music. Now there's the CDI, a compact disc with data and/or music. Then there's a flood of 5 1/4" media, including a write once disc, a read-only disc, a read-write disc, and even a disc that has characteristics of read-only on part of the disc and read-write on the other part. And let's not forget the video disc. Some discs come in a solid cartridge that looks like a giant Macintosh diskette. Then there's CDTV—the proprietary Commodore system. Finally, there's CD-XA, which is CD with nifty extensions.

DVORAK'S LAST COLUMN

All you need to know about for the moment is plain CD-ROM.

CD-ROM will become the medium for mass storage of research data. This is not data for researchers, but data for everyone. I already use Computer Select and Magazine Rack from Information Access (Foster City, California). Magazine Rack is fascinating, as it's an $89 CD-ROM disk containing 850,000MB (they compressed the data). It's essentially an entire year's worth of articles from over three hundred magazines. Magazine Rack is an outstanding work, and we can expect to see similar products from other vendors.

© 1991 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

I also use Front Page News, the Time Almanac, US History on Disk, the 900 Great Works of Literature, and other disks to help me in my column writing. Now there is a cross-referenced California phone book too. If you've *ever* had to look anything up for any purpose, you'll find it on CD-ROM someday. It will take less space and be easier to use than any reference book.

One of the most interesting CD-ROM makers in the country is Quanta Press, 2239 Carter Avenue, St. Paul, MN 55108. Phone the company at (612)641-0714 (telephone), (612)644-8811 (fax) to get a listing of its unique software. An example is The Officer's Bookcase, a full-text database. It's the equivalent of a dictionary of military-oriented terms and acronyms. The content of The Officer's Bookcase includes the Joint Chiefs of Staff's "Military Terms Dictionary" and the Defense Systems Management College's "Defense Acquisition Acronyms and Terms." A separate file area on the disc contains the volume "Soviet Terms Dictionary" from the Soviet Military Thought Series. All of the terms and acronyms found in The Officer's Bookcase CD-ROM were obtained through public domain sources, so this is legal!

This separation of US/NATO/IADB terms from the Soviet terms allows operational personnel to concentrate on their tasks, while intelligence researchers can avoid the US military routine.

The entire database covers terms from the 1960s to the present. This gives the end-user broad word/phrase selection capabilities. The Officer's Bookcase CD-ROM uses a customized version of a famous software package called LIST, by Vernon Buerg, for its search and retrieval.

Quanta Press has plans for an annual update of The Officer's Bookcase. Quanta is also actively seeking defense contractors who wish to contribute internal terms and acronyms lists to this dataset. The Officer's Bookcase may be purchased directly from Quanta Press for $149.

Also from Quanta look for Dick's Some of the Earth's Planes—a visual compendium of aircraft. Information is retrieved from the database via direct word or phrase searching, and by browsing the text. Hundreds of black-and-white photographs and VGA full-color images are available by the simple use of a hot-key (F9). It's $249.

Finally, topping off the Quanta list is The CIA World Factbook. This annual CD-ROM is an almanac that describes hard facts and figures of 248 countries and territories worldwide. Geopolitical, socioeconomic, demographic, and other country-specific data is accessed via full-text search-and-retrieval software. There is also an image section that contains 248 line drawing maps (300dpi) for desktop publishing. It's $99. This is hot stuff, especially for political mavens.

And then there's the game business. CD-ROM's popularity will increase dramatically when Nintendo rolls out a CD-ROM-based game machine, which is expected to ship within the next year. The current need for games to have a bunch of hard-wired chips in a game cartridge is just plain ludicrous (and expensive!) when it can all be done in software on a CD-ROM.

The expectation is that Nintendo, popularizing the technology, will finally trigger the price curve into a downward spiral—at least for the low-performance mechanisms.

In other words, the five years are up and it's time to think about buying a CD-ROM. Heavy users like myself will find solace in the arrival of the CD-ROM player that's a jukebox, which can hold a dozen or more disks. While a CD-ROM may contain 500MB or more of data, most users will find that they have to access more than one disk to accomplish their computing goals, especially if they are doing research. This bottleneck is probably a more critical time killer than the slow access time.

I'm reminded of a point made once by a computer engineer friend as we discussed the speed of the Cray 2 supercomputer. He said that to calculate the true speed of a supercomputer (or any computer for that matter) you have to add the queue time to the execution time. If you have to wait three months to have your program run, then what's the point if the execution time is only a few seconds? CD-ROMs' usefulness is limited by this time-consuming switching of disks. Still, it's faster than a trip to the library. ■

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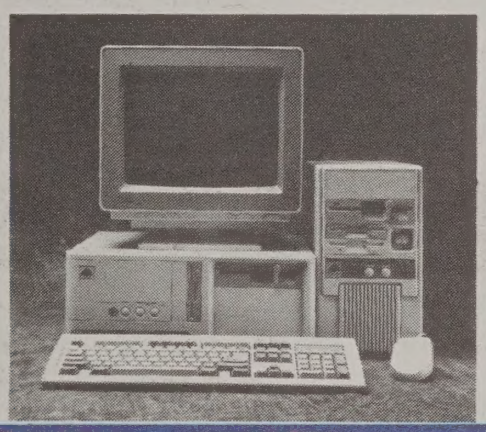

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We're Sorry.

What we really meant was:

QEMM-386 makes the most of every last 'K'—automatically. It finds more RAM between 640K and 1 megabyte than DOS 5 or any other memory manager. Lots more.

We under-sold Optimize.

Optimize does everything we said it does, but it manages your memory much more smoothly and quickly than you'd guess from this ad. It checks out virtually every possible combination of memory mapping—automatically.

We under-stated high memory gain.

QEMM-386 finds even more memory than we said—211K additional high memory in most cases. (We wanted to be conservative, but on most PCs, we got over 200K more room for TSRs and drivers between 640K and one megabyte.)

Oops!

When we said that all other memory managers require you to manually re-allocate memory between expanded and extended types, we should have said most memory managers require manual re-allocation, and none find more useable high memory.

We left out Squeeze.

Some TSRs require a lot more memory to start than they do to run. Squeeze increases available memory to accommodate their memory demand, then cuts it back to just what's necessary. The result? You can get more TSRs and utilities out of the way, and eliminate wasted memory.

Then there's VidRAM.

QEMM-386 can use memory set aside for graphics when you only need text. That's up to an additional 96K without rebooting!

Manifest is included, free.

Award-winning Quarterdeck Manifest is included with both QEMM-386 and QEMM 50/60. It's a $60 value that provides information you simply can't get any other way. And it makes memory simple to understand.

Save time; gain performance.

QEMM lets you use the TSRs you want and still leaves lots of room for network drivers, utilities and memory-hungry programs. You'll get fewer "out of memory" messages and get more work done smoothly and quickly.

Apparently this ad was misleading.

Trying not to over-promise, we were too cautious with our claims.

The truth is, QEMM-386 v.6 is better than we made it sound.

Not only does it typically find a lot more memory than we claimed, it also does its memory management job more quickly, smoothly and unobtrusively than we lead you to believe.

Results of running QEMM-386 v.6 with Stealth*

	DOS 3.3		DOS 4.0		DOS 5.0	
Model	DOS Program Size	Avail High Mem	DOS Program Size	Avail High Mem	DOS Program Size	Avail High Mem
IBM PS/2 80	581K	211K	572K	211K	620K	211K
Compaq 20e	581K	211K	572K	211K	620K	211K
ALR VEISA	582K	211K	573K	211K	620K	211K

This chart shows how big a DOS program can be and how much high memory is made available when you use our new QEMM-386. Sorry it isn't more colorful.

#1

QEMM is the #1 selling utility according to PC Magazine.

Stealth, our new RAM-gain feature, 'maps' ROM into other areas of memory—to provide you with the maximum available RAM between 640K and 1 megabyte. That's space QEMM then uses to load memory-hogging TSRs and drivers (like network software) out of the memory areas your big programs need.

How it works is not as important as the end result—more useable high memory—as much as 211K!

Our Optimize feature works better, too. From its new interface to the way it works with Stealth to calculate memory usage better, for maximum memory gain.

QEMM has won more recognition than all other memory managers combined.

QEMM-386 helps your programs run faster by giving them more memory. And it works great with any DOS from 3.3 to 5. And Windows, too. It's an essential tool for anyone who wants to get the most productivity out of the hardware and software they're using today.

Quarterdeck

* Here we are, being cautious again: Because Stealth alters the memory mapping of your PC, how much high memory you'll gain depends on the 'BIOS' in your computer. We've tested Stealth on a wide range of PCs, from Compaqs to PS/2s; ALRs, Toshibas and many others. Typically, an additional 211K becomes available between 640K and 1 megabyte. Depending on your PC, your memory gain may vary.

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Los Angeles (213) 477-5122

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Los Angeles (213) 477-1577

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Woodland Hills (818) 710-9174

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